



El Dorado
Benson LLC



The Villages at *Vigneto*

Final Community Master Plan and Development Plan



September 8, 2015

The Villages at Vigneto

Final Community Master Plan and Development Plan

City of Benson
September 8, 2015
Version 2.03

Applicant
El Dorado Benson, LLC.

Property Owner
El Dorado Benson, LLC.

Development Team
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United Civil Group

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1. Preface

El Dorado Benson, LLC (“El Dorado” or the “Developer”) wrote The Villages at Vigneto (“Vigneto,” “Project” or the “Development”) Final Community Master Plan and Development Plan, (collectively the “Final CMP”), with several purposes in mind. First and foremost, the Final CMP is intended to meet the conditions of approval as required in the City of Benson Zoning Regulations entitled “Section Three A – Community Master Plan Approval” (Approved by Ordinance No. 490 on May 16, 2005). Other key purposes for the Final CMP include:

- Creation of a cohesive, dynamic, and complete vision for the development of Vigneto;
- Creation of a single document specifically created for the guidance of the development of Vigneto;
- Establishing standards that are unique to Vigneto (formerly known as Whetstone Ranch), that the Developer and the City of Benson (“Benson” or the “City”) will rely on throughout the development process;
- Whereas the City may change regulations, standards, etc. from time to time and impact all other properties within the limits of the City of Benson, the Final CMP includes standards and regulations that will remain consistent for the life of the Development within the boundaries of Vigneto;
- Creating consistency within Vigneto so that the same standards will apply to development of all phases of the Project;
- Identification of standards, and/or regulations that do not specifically require approval and are not identified within section Three A–Community Master Plan Approval, that we have deemed essential for the success of Vigneto;
- Clarifications of City documents where contradictions and/or multiple standards apply;
- Creation of land use categories that are specific to Vigneto;
- Establishment of development standards specifically defined and established as a baseline for Vigneto;
- Establishment of design standards for Vigneto that are consistent for all land development (“horizontal” improvements) and all architectural elements (“vertical” construction) of Vigneto.



Long Term Reliability of Final CMP - This Final CMP is intended to be a document that provides guidance with specific information to create consistency from the beginning to completion of development of Vigneto. It is intended to establish long-term reliability of all the provisions identified within this Final CMP. It is intended to be as complete as possible, however, we recognize that as time goes by, additional guidance may be required. We also understand circumstances may change and from time to time amendments and addendums to the Final CMP may occur to reflect what clarifications or technological advancements may allow or require.

El Dorado has spent over two and a half years carefully planning this project with some of the industry's best experts. The Project involves nearly 25 years of predevelopment entitlements and approvals, which has led to this Final CMP.



2. Introduction

2.A “The Villages at Vigneto”

The Villages at Vigneto: Inspired by Nature

As you venture through the Benson region known as “The Gateway to the Land of Legends,” extraordinarily clear blue skies and wide open spaces signal your arrival. The breathtaking panorama of rolling hills and vast terrain appears and captivates your senses. You’ve arrived at The Villages at Vigneto.

Vigneto is nestled at the foot of the Whetstone Mountains and perched above the San Pedro River Valley making it the perfect place to live. Home to incredible amenities overlooking the grasslands and San Pedro River Valley. It’s a celebration of relaxed indoor/outdoor living and individual vitality—a beautiful example of nature, community, and lifestyle blending in unexpected ways.

As with good wine, Vigneto is inspired and influenced by its surroundings. Welcome to our new hillside community with endless mountain and valley views.

IMAGINE A PLACE...

- That ranks in the top 1% of counties in the country
- That is supported by four counties and fifteen towns and cities in the region,
- With the best climate and scenery in the country,
- Where you can choose your lifestyle,
- Where you can experience a lifetime of possibilities all in one place,
- To make new friends,
- To build a family,
- To bring your family together,
- That is safe and friendly,
- To admire the environment,
- To help the environment,
- To interact with the community,
- That is socially connected,
- With your choice of recreational activities,
- To get involved,
- To retreat,
- To volunteer,
- Where there is a lot to do,
- Where you don’t have to do anything,
- That brings people together from around the country, and around the world,
- To be inspired,



- To inspire,
- To help,
- To be helped,
- That is a hub of regional activity,
- With an economic opportunity,
- For all ages,
- To raise your glass,
- To be educated,
- To work,
- To retire,
- To rest,
- To be quiet,
- To be loud,
- To laugh,
- To cry,
- Unlike any other place in Arizona,
- With good food, good wine and good people,
- Where you want to be...The Villages at Vigneto...

Lifestyle Final CMP Dynamically Planned - El Dorado Benson, LLC submits this Final CMP for the Project we have come to identify as “*The Villages at Vigneto.*” El Dorado’s primary objective is to develop a world-class, dynamic master planned community that facilitates a focus on lifestyles that in most places can only be imagined.

Region, Top 1% of Country - The Washington Post recently published an article rating Cochise County in the top 1% of places to live in the United States based on the natural features and year round climate found there.

Diverse natural features such as rolling hills, densely vegetated creek beds, high-forested mountains and open grasslands allow the new residents of Vigneto to enjoy the fresh outdoors year round. The elevation of the Project (approximately 3,800 to 4,800 feet above sea level) has cool summer evenings, warm winter days and year-round sunshine. The highlights of this setting combine to make Vigneto a place where one can live a life envied by all.

General Final CMP Amenities - Vigneto includes a mix of 28,000 age-targeted and traditional family homes as well as commercial and recreational development on 12,167 acres. Recreational amenities include: parks, storage lakes and natural watersheds, open space, entertainment venues and a variety of amenities such as golf, lawn bowling, bocce ball, pickle ball, mountain biking, and hiking. The Project is sensitive to the environment and approximately 3,000 acres of open space has been identified for the Project. Approximately 600 acres of that open space will be developed into passive and active recreational opportunities including parks, trails, playing fields, and golf course(s).

Social Town Center/Town Square - The heart of the community is envisioned to be the Town Square (also known as “Village Town Center”) where onsite staff will facilitate the formation of social clubs, gatherings and excursions. There will be a variety of passive and facilitated



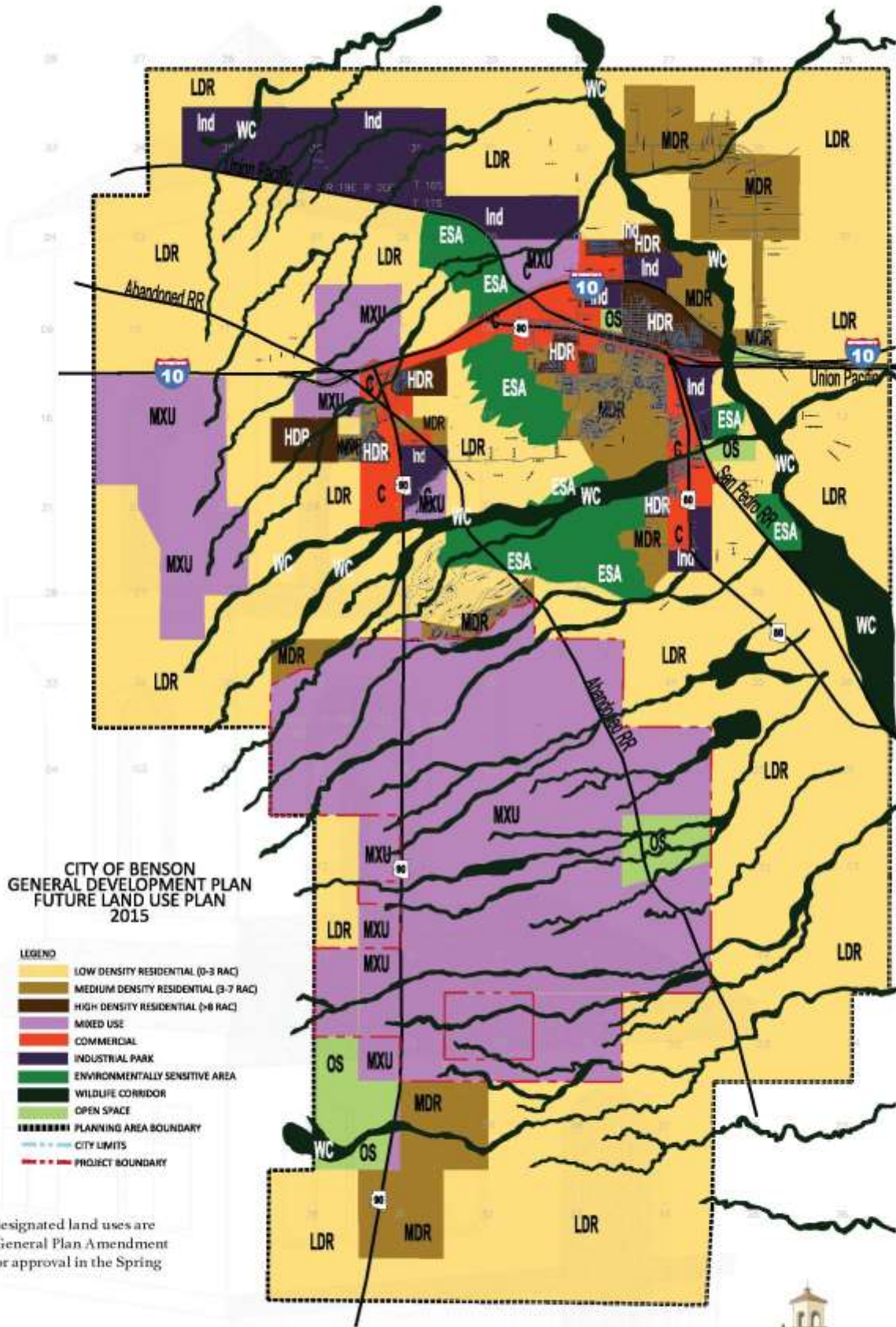
destinations scattered throughout the Villages at Vigneto. These facilities will include Community, Regional and Neighborhood recreation centers ranging in size to accommodate various activities.

Recreation Centers - Two to four Community recreation centers will be individually constructed in multiple phases or be constructed in a single phase and will range in size at build out from 30,000 to 55,000 plus square feet. These Community recreation centers will serve as many as 10,000 dwelling units. Regional recreation centers will range in size from 8,000 to 16,000 square feet, and; six to ten will be constructed serving as many as 5,000 dwelling units each. Neighborhood recreation facilities will be constructed within groupings of multiple neighborhoods and facilitate postal needs, overflow parking, and contain passive amenities that will serve 700 to 1500 individual dwelling units.

These recreation centers and all other destinations scattered within The Villages at Vigneto will be connected and accessible by residents through a network of roadways, paths, and trails. This network will encourage alternative means of transportation through the ease in which it connects the community and its capacity to accommodate pedestrians, bicycles, and various types of low speed vehicles other than traditional automobiles. Also, Vigneto's "Trail System" described later in this Final CMP, will link the community to larger regional and state trail networks.

Economic Benefit of Final CMP - El Dorado anticipates the Project will take approximately 20 years to complete (although this time frame is subject to market conditions and may change). According to Dr. Robert Carreira (Chief Economist for UsEconomicResearch.com and the Director of Cochise College's Center for Economic Research for the past 12 years), in his economic impact study from July, 2015, the Project will create 16,355 new jobs at the height of construction and 8,780 permanent jobs once the Project is complete. The economic activity generated by the Project will generate almost \$24 billion in spending and sales, and \$7.7 billion in household earnings. Vigneto will sustain \$1.2 billion in annual economic activity after the Project is complete. During the build out period it will generate \$1.5 billion in tax revenue to all local governments in Cochise County. Vigneto is forecasted to generate \$79.6 million of net tax revenue after all local government costs over the forecasted duration of build-out. This type of impact is unprecedented in this part of Arizona and will solidify a prosperous future for Benson, Cochise County and the surrounding towns, and communities. El Dorado is sensitive to socio-economic issues and has taken great care throughout the predevelopment stage to ensure the Project has a positive impact on the entire region. Due to this incredible impact, the Project has received strong support and recognition throughout the region. Recently, Southeastern Arizona Governments Organization ("SEAGO") passed a resolution to formally back Vigneto, highlighting the economic impact and environmental sensitivity. SEAGO represents four counties and fifteen towns and cities.





Disclaimer: The designated land uses are per the Proposed General Plan Amendment to be considered for approval in the Spring of 2015.

Disclaimer: This exhibit is shown for general planning and illustrative purposes only and is not to be relied upon for actual dimensions. The elements shown are diagrammatic and shall not be construed as a final representation of engineering design.



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The Villages at Vigneto

EXHIBIT 1: CITY OF BENSON GENERAL PLAN

2.B Overview of Project Living

The Villages at Vigneto is intended to create a lifestyle made possible only by the unique characteristics of the local natural environment. With an average 284 days of sunshine and 14-17 inches of rainfall per year, the City of Benson delivers an ideal climate for comfortable year-round living in the high Sonoran Desert. The mountains and valleys provide majestic views during the day, and without any light pollution, the clear air and high elevation provide spectacular viewing of the night sky.

Vigneto integrates the natural amenities of the local ecology with modern conveniences, social connectivity, interest/activity facilities, and a cohesive built environment, to offer a truly complete and unique lifestyle.

2.C Regional Setting

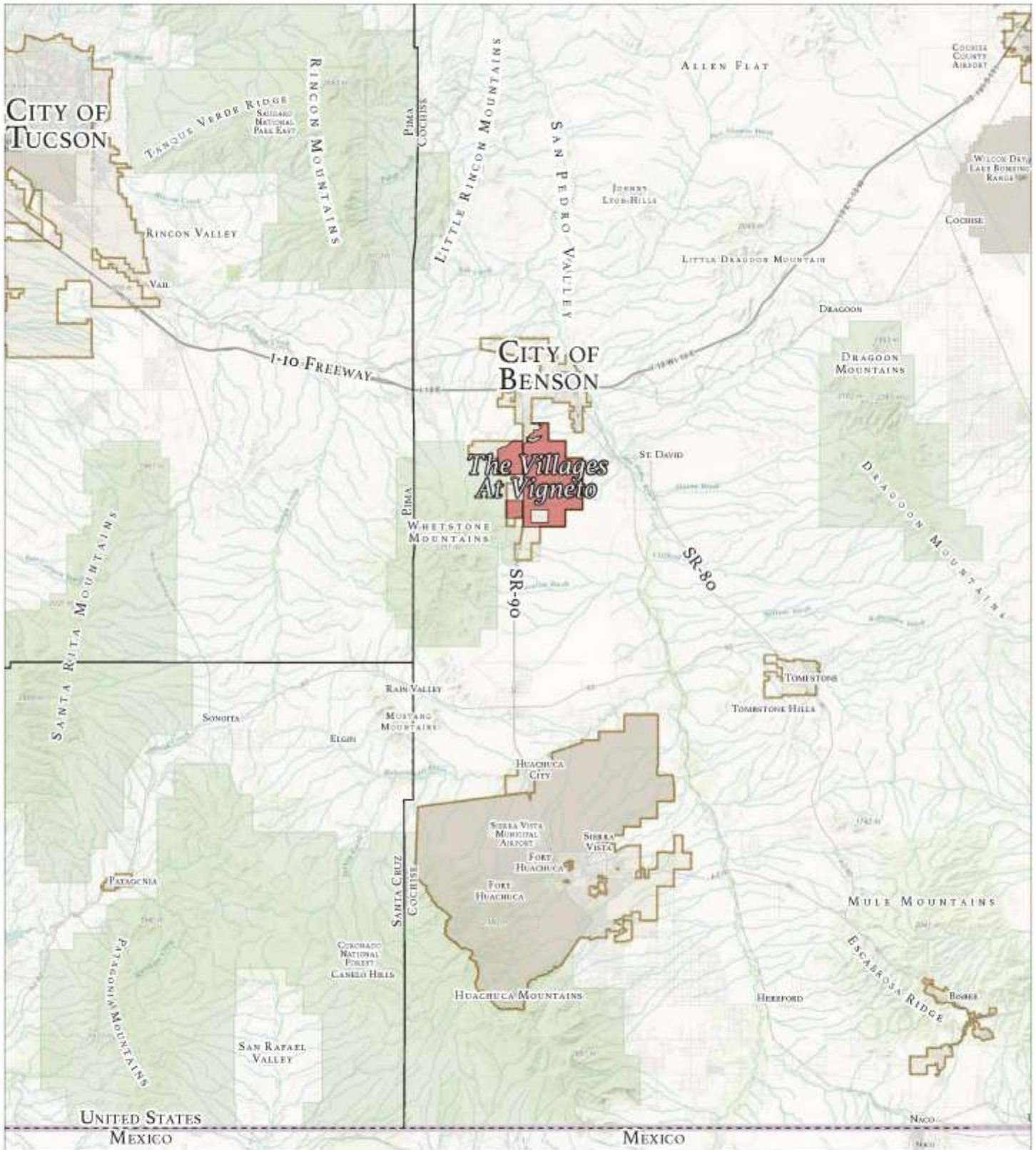
The Villages at Vigneto encompasses approximately 12,167 acres (See Appendix B: Legal Description) and is located on both sides of State Route 90, three miles south of Interstate 10. The Coronado National Forest, Kartchner Caverns and Whetstone Mountains lie adjacent to the Project. The San Pedro River is approximately four miles east of the project with the Dragoon Mountain Range further east, acting as a backdrop. (See Exhibit 2: Regional Context Map)

Regional Amenities - Vigneto is in a convenient proximity to Kartchner Caverns, Tombstone National Historic Landmark, Bisbee, Tucson, Sierra Vista, Mission San Xavier del Bac, the Amerind Foundation Museum, Tubac and the Coronado National Memorial. This proximity makes it a natural geographical, cultural and recreational hub for Southeastern Arizona. Nature's diversity and abundance can be appreciated by visiting Ramsey Canyon, San Pedro River, Mt. Graham, Patagonia/Sonoita, Madera Canyon, Canelo Hills, Cienega Reserve, Coronado National Memorial, and Holy Trinity Monastery and Bird Sanctuary. Aviation and military history can be explored at Sierra Vista/Ft. Huachuca and the Pima Air Museum. Vigneto is also in close proximity to the wine regions of Patagonia/Sonoita, and Wilcox.

Major Land Owners and Neighboring Cities - Benson's central business district is located four miles northeast of Vigneto. State Trust Lands make up much of the ownership in the region to the north, south, east and west. Further south of the project are the communities of Huachuca City and Sierra Vista. Downtown Tucson is located approximately half an hour west, by car.

Surrounding Development and Character - While the immediate surrounding area is characterized as rural in nature, urban and suburban development is occurring in close proximity to the project. Adjacent properties are shown on Exhibit 3: Adjacent Property Map.





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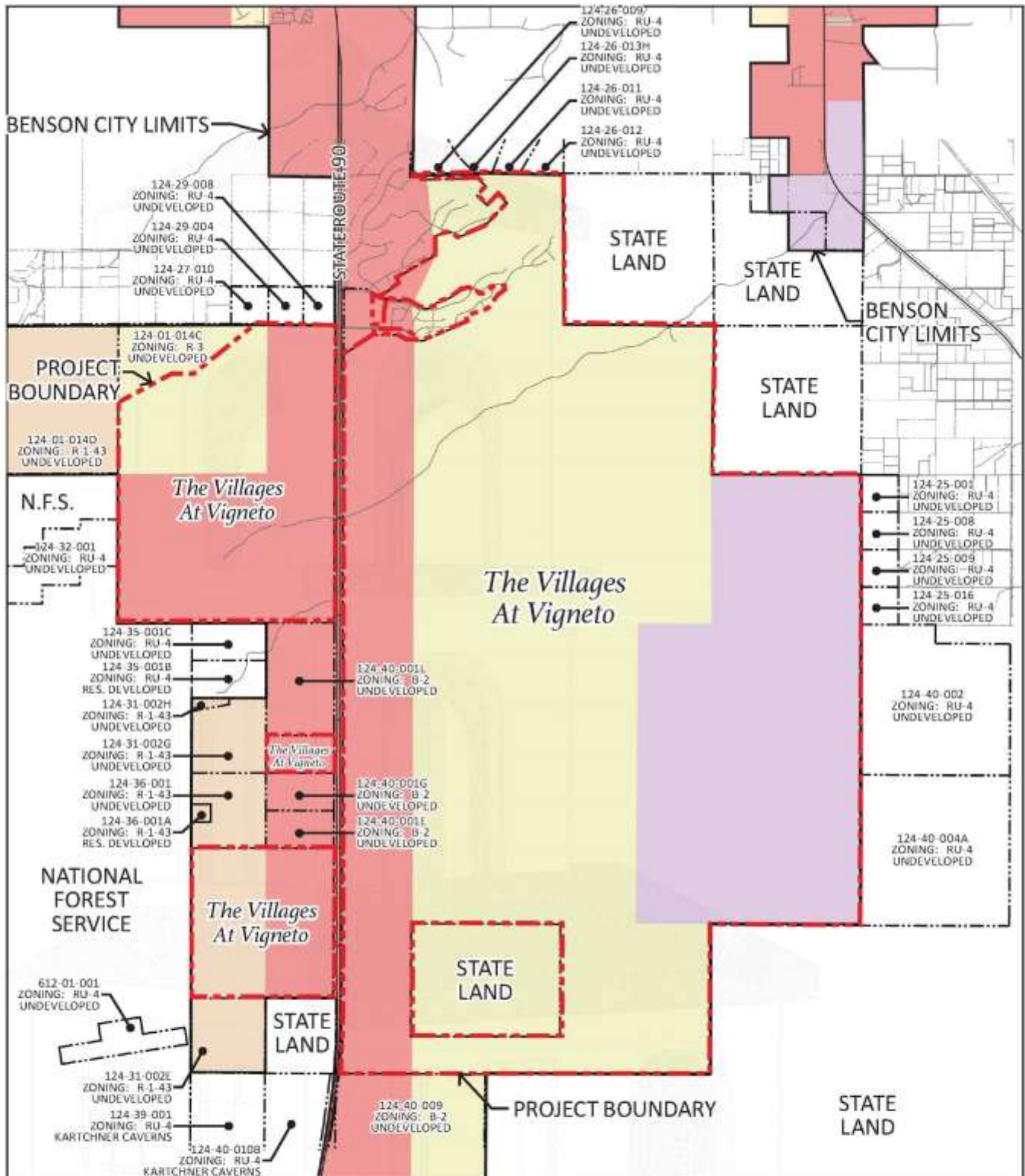
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The Villages at Vigneto

EXHIBIT 2: REGIONAL CONTEXT MAP



CITY OF BENSON ZONING DESIGNATIONS

- B-2 General Business
- I-2 Light Industrial
- R-1-43 Single Family Residential 45,000 sq ft lot
- R-3 Single, Multi Family and Manufactured

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EXHIBIT 3: ADJACENT PROPERTY MAP

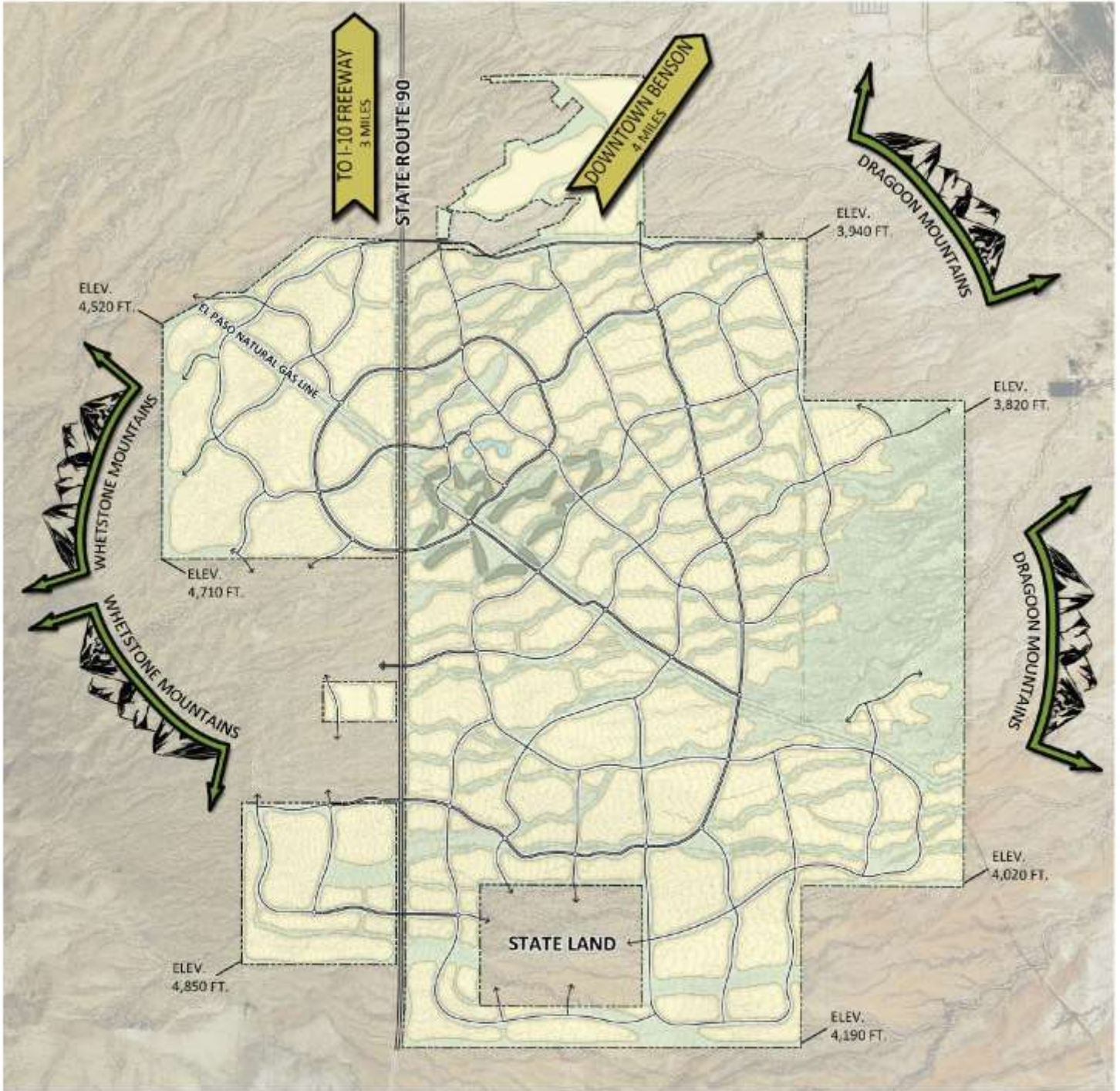
2.D Physical Setting

The Villages at Vigneto property generally slopes eastward 3% from the Whetstone Mountains toward the San Pedro River Valley, and is crossed with numerous natural washes (several under the jurisdiction of the U.S. Army Corps of Engineers (“ACOE”), as described in more detail below in the “Entitlements History” section. These washes will continue to be utilized to transport flowing water from the Whetstone Mountains to the San Pedro River and many will also serve as potential locations for trails, open space, and natural habitat. (See Exhibit 4: Regional Physical Settings Map)

Property Characteristics - The dominant natural foliage consists of rugged mesquite trees and yuccas, mixed with the wild grasses that has for several centuries provided an attractive rangeland for cattle. Scattered on the site are natural washes supporting smaller groupings of trees and plants such as the oak, cottonwood, sedge, and other woody plants.

An abandoned railroad corridor is located near the eastern border of the Project. The majority of the corridor will be utilized for future trails, roads, and utility alignments. Some portions of the old rail bed corridor may be removed to accommodate utilities and infrastructure improvements.





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The Villages at Vigneto

EXHIBIT 4: REGIONAL PHYSICAL SETTINGS MAP

2.E Opportunities and Constraints

Introduction - The property that makes up The Villages at Vigneto has a beautiful natural landscape that creates unique possibilities and opportunities for development. The Project is subject to many constraints due to its size, the natural topography of the land, manmade improvements, and infrastructure required for the phased build-out of the Project. The opportunities and constraints listed below are listed to simply identify the characteristics of the property in general and not for the purpose of requiring additional specific studies or reports related to the specific items listed. Planning Unit Master Plans will be developed as required for each Planning Unit Plan as described in Section 3.C. Planning Unit Master Plans will address the issues discussed in this Opportunities and Constraints section.

Natural Constraints - Generally, the constraints stem from the topography and slope of the land. The property slopes approximately 3% across the entire grade from a high elevation point of nearly 4,800 feet along the western boundaries, to a low elevation point approximately 3,800 feet along the eastern boundaries. Along the slope lines, the property rises and falls from south to north with ridgelines and natural stormwater sheds. Much of the acreage has wide vast sloping plateaus, while other areas are rugged, and full of what is best described as canyons between the ridgelines. The property also includes rolling hillsides and terracing gentle hills and valleys. Soil conditions at and below the surface of the land may also impact development of the Project.

Manmade Constraints - There are also manmade constraints that impact the property. The right-of-way alignment for State Route 90 ("SR-90") is near the western third of the property. The Project includes five miles of frontage on the east side of SR-90, and approximately 3 miles of frontage along the west side of SR-90. Electrical transmission lines cross the property near the eastern and northern edges. A 10-inch diameter high pressure gas pipeline owned by Kinder Morgan (previously owned by El Paso Natural Gas) also crosses the property. This 20 foot wide existing easement traverses approximately five miles diagonally from the southeastern corner of the property to the northwestern corner. An abandoned rail bed corridor enters the property at the southeastern corner, and exits the property near the northeastern corner.

Below are constraints El Dorado has more specifically identified and presented with more detail. They are as follows:

Stormwater Runoff - The Whetstone Mountain range to the west of the property has naturally occurring watersheds defined by ridges and valleys. The natural rainfall that occurs in these watersheds gather into dry wash beds. It is common over the past century for many of these wash beds to not produce storm-water runoff for a decade or more. The wash-beds might carry stormwater in consecutive years, and possibly for less than an hour in any given year. Other years they may carry stormwater many consecutive days in a row; however, this is unlikely and very seldom and unpredictable in terms of magnitude, duration, or velocity. These stormwater flows are impacted by both natural and manmade characteristics of the property including but not limited to SR-90 and some existing cattle ponds, and an abandoned rail bed corridor. Planning Unit Master Plans used for the purpose of identifying stormwater flows will be used to



assist the civil engineering required for the development and construction of each development phase in the Villages at Vigneto. (See Section 3.C—Planning Units).

Domestic Water Supply - There is a difference of nearly 1,000 feet of vertical elevation from the highest point on the property to its lowest. Domestic water supply is planned to accommodate increased pressure in pipelines at the lower elevations. The Project is divided into water pressure zones, each zones not exceeding 150 feet in vertical elevation. A conceptual water system is discussed later in this CMP.

Sewer Collection and Existing Waste Water Treatment Plant (“WWTP”) - The final location of the WWTP for the Project was determined in 2005 and the first phase of the WWTP for the Project was built in 2007. Approved by SEAGO, the location of this WWTP and the topography of the land impacts how much of the Project can be serviced by gravity flow sewer lines to the WWTP. El Dorado plans to minimize land areas that are not able to gravity flow sewer to the WWTP. Due to the existing topography, lift stations will be used where necessary. A conceptual master sewer collection system is presented and discussed later in this CMP.

Effluent Disposal & Soils Conditions - Soil conditions of the property within the Project ultimately determine the location of where effluent can be recharged. Due to subsurface conditions, effluent recharge basins for the Project are limited to certain areas near SR-90. As a result, a conceptual effluent master plan is included with this CMP.

U.S. Army Corps of Engineers (“ACOE”) -The Clean Water Act of 1973 (“CWA”) is administered and permitted through the ACOE. “Navigable Waters of the US” are subject to the CWA and any action that impacts navigable waters require a permit. The conditions of the permit (See Entitlement History below for permit information) play a major impact on the phasing boundaries and infrastructure planning of this CMP. The property (not the “named” development) was submitted to the ACOE for approval of development activity to allow approximately 8200 acres of the property to be developed to include 20,000 dwelling units. The development of the balance of the property, consisting of approximately another 4000 acres within the boundaries of the Villages at Vigneto will necessitate the submission of an application to the Army Corp of Engineers in the future. When these phases are planned, and approved for development by the ACOE, engineering studies, and detailed planning will be prepared at that time. The remaining 4000 acres have the same characteristics as the initial 8200 acres that was permitted by the ACOE.

State Route 90 - When SR-90 was constructed, the improvements took into consideration stormwater flows coming off the Whetstone Mountains from the west. However, some of the culverts that cross the highway are not sized to convey the 100-year storm event. The Final CMP addresses these circumstances. SR-90 is regulated and under the jurisdiction of Arizona Department of Transportation (“ADOT”), and any improvements or changes to access to SR-90 must be approved by ADOT. A Master Transportation Plan (“MTP”), prepared by Dr. Sarah Simpson of United Civil Group, is complete and included in this Final CMP. The initial application identifying access, and modifications to SR-90 contained in the MTP were reviewed with ADOT. (See Appendix D: Master Transportation Plan).



Kinder Morgan (El Paso Natural Gas) Natural Gas Pipeline -The high-pressure gas pipeline, formerly owned by El Paso Natural Gas, which crosses the property was constructed in 1933. The gas pipeline is maintained by its current owners, Kinder Morgan, in accordance with Federal Transportation regulations. It was not initially designed to adequately deal with stormwater flows, however, the owners of the gas pipeline are mandated federally to ensure the quality and integrity of the gas pipeline in its active and continual use. As the beginning phases of improvements for the Project occur, the gas pipeline will be improved at various locations to meet current Federal standards. El Dorado has expanded the original 20-foot wide easement in favor of Kinder Morgan to 40 feet to accommodate future maintenance requirements of Kinder Morgan. Best Management Practices (“BMP”) as provided in guidelines through sub committees of the Federal Department of Transportation (Pipelines and Informed Planning Alliance) have been implemented to create a non-residential, non-overnight occupancy zone for 175 feet on either side of the centerline of the gas pipeline in both directions away from the pipeline. Four small portions of existing pipeline are above ground and will be relocated underground through the efforts of Kinder Morgan.

Abandoned Rail Right-of-Way - An old abandoned rail bed was not originally planned or constructed to handle complete 100-year storm events. il bed will be modified in locations where necessary to meet current anticipated storm flows.

Electrical Transmission Lines - The electric transmission lines that cross the property are the primary electric supply lines and will not be moved through the build out of the Project. The Project will accommodate the existing location of the electrical transmission line easements.

Limits of Construction - Parcels of land that will be constructed on for housing, recreational, commercial, or any other development use will have limits of construction that are established after evaluating all of the preceding opportunities and constraints. The limits of construction generally equates to the remaining non-impacted land acreage that is not affected by any other natural or man-made existing condition. However, where appropriate, existing conditions may be altered after being evaluated for consideration to mitigate those alterations. For, example, some low flow washes that are naturally braided across several hundred feet in width of land have 95% of the storm water flows contained in a very narrow channel, and the remaining 5% of stormwater flows in a sheet flow pattern and then re-connects with the wash further downstream. In examples such as this, the low flow washes may be consolidated to the main stream dry bed channel and the remaining sheet flow (or low flow washes) areas will be engineered to be included in the limits of construction of the remaining developable areas. This consolidation is fully subject to existing permits issued by the Army Corp of Engineers and does not impact the zones within the jurisdiction of the Army Corp of Engineers.

All of the Opportunities and Constraints listed in the preceding paragraphs are not to be interpreted as requiring further evaluations or studies other than those ordinarily performed and required by jurisdictions having authority.



2.F Entitlement History

The Project's entitlement history demonstrates that the Developer's rights to develop the Project are vested both pursuant to the Annexation Development Agreement, as amended, and as a matter of law. The Developer may rely on a committed water source, use of an expandable wastewater treatment facility, and a validly issued 404 Permit for development of the Project.

Development Agreement, Amendments and Addendums – Development of the Project has been anticipated since 1993, when the City approved the Annexation Development Agreement dated November 3, 1993 for property that included the Project. The City thereafter immediately annexed the property subject to the Annexation Development Agreement by Ordinance 352 (the "Annexed Property").

The Annexation Development Agreement has been amended several times since then:

- March 21, 2005 - The Amendment to Annexation Development Agreement (executed as of March 21, 2005); this Amendment to Annexation Development Agreement applies only to the portion of the Annexed Property known as The Canyons at Whetstone Ranch.
- March 21, 2006 - The Addendum to Whetstone Annexation Agreement dated March 21, 2006 and recorded in the Official Records of Cochise County as Document Number 060412927, which currently applies to all but 920 acres of the Annexed Property, and is applicable to the Project.
- August 27, 2012 - The Second Addendum to Whetstone Annexation Development Agreement dated August 27, 2012 and recorded in the Official Records of Cochise County as Document Number 2012-22955, also applies only to the portion of the Annexed Property known as The Canyons at Whetstone Ranch.

As amended, the Annexation Development Agreement applies to the Project or portions thereof and remains effective until December 31, 2025.

General Development Plan - On February 23, 2015 the City adopted The City of Benson General Development Plan (the "General Development Plan"). The General Development Plan designation for the Project is primarily "MXU" or "Mixed Use"; the balance of the Project (along the eastern boundary) is designated as "OS" or "Open Space."

Preliminary Master Plan - On February 23, 2015, El Dorado filed a request for Preliminary Community Master Plan and Development Plan approval ("Preliminary CMP"). The City found that the Preliminary CMP conformed to the General Development Plan and otherwise met the requirements of the City's Zoning Regulations, Section Three A. Accordingly, on April 13, 2015, the City approved the Preliminary CMP.

Arizona Department of Water Resources (ADWR) Water Allocation - By Decision and Order No.41-401803.0001, which was issued in 2008, the Arizona Department of Water Resources ("ADWR") designated the City as having an adequate water supply in the amount of 13,474 acre-feet per year within its service area. The City has allocated 12,000 acre-feet per year of water to



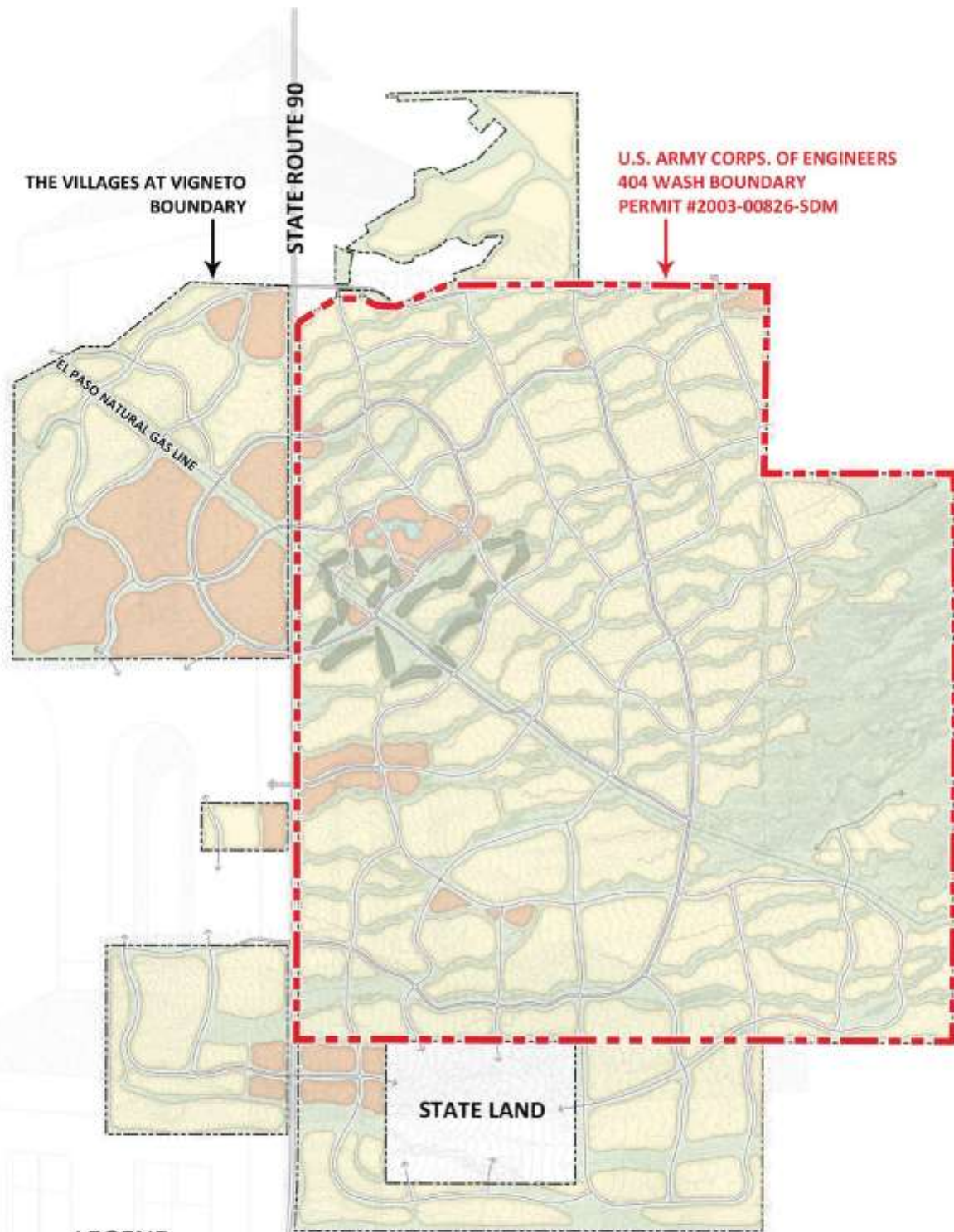
the Project, which is sufficient to meet the projected demand for Vigneto.

Section 208 Water Quality Management Plan - The Southeastern Arizona Governments Organization’s Section 208 Water Quality Management Plan was amended in order to locate a wastewater treatment plant to serve the Project. The first phase of the wastewater treatment plant is operational and is currently being used as a storage facility for The Canyons at Whetstone Ranch.

Army Corps of Engineers 404 Permit - In June 2006, the ACOE issued Permit #2003-00826-SDM (the “404 Permit”), which applies to 8,212 acres of the total 12,167-acre Project (the “Permitted Area”). The 404 Permit permits the disturbance of approximately 51 acres of 475 acres determined to be jurisdictional waters of the ACOE within the Permitted Area. The 404 Permit also approves development of the Permitted Area with a maximum of 20,000 units. Development within the Permitted Area must comply with the Habitat Mitigation and Monitoring Plan, Whetstone Ranch, prepared by Westland Resources, Inc. in October 2005 and approved by the ACOE as part of the 404 Permit. (See Exhibit 5: Existing 404 Permit Boundary). The Developer will seek permitting for remaining land within the Project boundaries prior to development as required and/or determined by the ACOE at such time that a permit is necessary.

Final Community Master Plan and Development Plan - On April 13, 2015 the City of Benson approved the Preliminary Master Plan. El Dorado Benson, LLC, submitted to the Planning and Zoning Commission for approval on September 8, 2015. As required by Section Three A of the City of Benson Zoning Regulations, El Dorado Benson, LLC, the applicant, has submitted the Final Community Master Plan to the Planning and Zoning Commission for approval within two (2) years of approval of the Preliminary Community Master Plan.





THE VILLAGES AT VIGNETO BOUNDARY

STATE ROUTE 90

U.S. ARMY CORPS. OF ENGINEERS
404 WASH BOUNDARY
PERMIT #2003-00826-SDM

EL PASO NATURAL GAS LINE

STATE LAND

LEGEND

- - - - - Approved U.S. Army Corps. of Engineers 404 Wash Boundary
8,212 Acres - Up to 20,000 Units as Part of the Total 28,000 Units
- Final CMP Boundary for The Villages at Vigneto
12,254 Acres - Maximum of 28,000 Total Units

Disclaimer: This exhibit is for illustrative purposes only and not to be relied upon for actual dimensions.

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The Villages at Vigneto

EXHIBIT 5: EXISTING ACOE 404 PERMIT BOUNDARY

3. Final Community Master Plan and Development Plan

3.A Final Community Master Plan, Development Plan and Planning Units

Conformance with Zoning Regulation Section Three A - This Final CMP was prepared pursuant to the requirements of Section Three A of the City's Zoning Regulations. It addresses the technical issues necessary to demonstrate that the land uses and densities approved in the Preliminary Community Master Plan and Development Plan (collectively the "Preliminary CMP"), approved by the City Council on April 13, 2015, can be adequately serviced, and sets design parameters to be utilized in the development and platting of the Project. The Final CMP refines and supersedes the Preliminary CMP. Section Three A of the Zoning Regulations refers to both a "CMP" and a "final development plan"; for clarity, this Final CMP constitutes both the CMP and "final development plan" for the Project.

Harmonious and Dynamic Community - The Final CMP has been carefully considered and dynamically planned with the intent to allow for master planning of activities including land development, residential, recreational facilities, and commercial enterprise to co-exist in a harmonious manner. All these components have been carefully planned to take into consideration the existing constraints and opportunities of the natural conditions of the land. This Final CMP conforms to the General Development Plan, which designates the vast majority of the property within the Project as MXU ("Mixed Use") and anticipates a variety of land use categories to be interspersed around the community as described in Section 7 of this Final CMP. The balance of the Project (along the eastern boundary) is designated as OS ("Open Space"). Overall, Vigneto has underlying zoning designations of R-3, B-2, and I-1.

Permitted Variances to City Documents - As permitted by Section Three A of the Zoning Regulations, this Final CMP includes standards, regulations, or criteria that may differ from those regulations contained in the City's Zoning Regulations and Building Codes. This Section sets forth the procedure for interpretation of the Final CMP:

- The requirements contained in this Final CMP are the base requirements for development in The Villages at Vigneto.
- This Final CMP is not intended to interfere with, abrogate, or annul any easements, covenants or other agreements between parties, except that if this Final CMP imposes a greater restriction for a given criteria, this Final CMP shall control.
- This Final CMP shall be implemented in compliance with the Rules (as set forth in Section 8 of this Final CMP).
- In the event of a conflict between the Final CMP and the 404 Permit, the 404 Permit shall control.



- In the event of a conflict between the Final CMP and any other land use entitlements approved specifically for the property on which the Project will be developed as of the date this Final CMP is submitted, this Final CMP shall control.

3.B Design Philosophy

Lifestyle and Social Connectivity - El Dorado's vision for The Villages at Vigneto is more than creating a beautiful and practical, well-engineered master planned community. It is to provide a social lifestyle by producing an abundance of activities allowed by the physical surroundings. Vigneto is to be a gathering place as well as a central hub for regional events and festivals that celebrate the natural and cultural resources of the surrounding communities. The Project will include an age-targeted lifestyle community with at least 18-27 holes of championship golf. The existing water studies show potential for 54 holes of executive length golf. As the market demands, additional executive length golf will be added. 54 executive length holes are equivalent to one 18-hole championship course. The community will include multiple recreation centers of various sizes.

Inspired by Natural Surroundings - Designed around the natural environment and incorporating classical design elements and some agri-business, Vigneto will provide a mix of residential, commercial, office, hospitality, medical care, recreation, and educational opportunities for residents. Modern amenities will be blended with the natural hillsides and rolling terrain consistently through build out to ensure each new Planning Unit integrates harmoniously with the previous phases. In keeping with the goal of maintaining natural watercourses, 90% or more of the washes that cross the property will be maintained in their natural condition, further adding to the careful blending of natural and built environments. With a maximum of 28,000 residential units spread out over 12,167 acres (approximately 2.3 dwelling units/acre), Vigneto will blend into the environment with densities well below those traditionally found in other large master planned communities.

Social Town Center/Town Square - The Project will be developed around a Town Square, which will be planned as an entertainment hub located on a series of effluent storage lakes with a mix of commercial and office uses. The location of the Town Square will be dictated by the market and further engineering analysis to be completed at the Planning Unit level. (See Section 3.C— Planning Units). A community park will be located near the Town Square that could host numerous local, regional and national events such as cultural, wine, and food festivals among others. Additional commercial/office opportunities will exist within the Project along SR-90.



Entry Features - The main entry to the Project is located and crafted to take advantage of all the natural attributes of the surrounding San Pedro River Valley including the rolling hillsides and the panoramic vistas of the Dragoon Mountains. Various forms of spires and/or campanile will be scattered throughout the Project to acting as vertical landmarks providing identity to each village within Vigneto. These structures will vary from location to location and may be constructed



within plazas, round-a-bouts, and/or other featured locations within the Project. These structures will act as beacons throughout Vigneto and will signal the start of the decompression zone from the highway at the main entry. (Reference Illustration 1) The entry roadway creates a sense of arrival and serves as a marketing trail descending toward the main village highlighting the community's natural vistas, view corridors, vineyards, recreational facilities, golf courses, master trail system, and Town Square.

Illustration 1 - Monumentation Structures

3.C Planning Units

Phasing of Planning Units - For ease of reference, the definitions for "Planning Unit," "Planning Unit Plan," and "Planning Unit Master Plan" as used herein are set forth as follows:

Planning Unit - An area of land within the Final CMP that is the subject of more specific planning. Exhibit 6 identifies 14 Planning Units.

Planning Unit Plan or "PUP" - The complete plan submittal for each Planning Unit, which will include the information listed below.

Planning Unit Master Plan or "PUMP" - Each of the Potable Water, Sewer, Reclaimed Water, Drainage, and Traffic Circulation/Transportation Planning Unit Master Plans, all of which are required elements of the PUP.

Phasing and Timing of Planning Units - The Final CMP blends multiple regions of phased developments that could take 20 years or longer to develop. Because of practical reasons involved in planning, financing, constructing, and phasing of a project this size, Planning Units are used to identify smaller areas of land within the approximate 20 square miles of Vigneto. Following review of each Planning Unit Plan and approval of the PUMPs contained therein as described below, the Developer will submit for review and approval preliminary and final plats and site plans, as appropriate, for development within such Planning Unit.

Sizing and Flexibility of Planning Units - Planning Units within Vigneto have been conceptualized and shown on Exhibit 6: Planning Unit Map. Exhibit 6 identifies 14 Planning Units, which will generally range in size from approximately 500 to 1500 acres. Some of the Planning Units have higher densities of residential uses, while others have higher densities of commercial use or even open space. Generally, the size of each Planning Unit is based on average total dwelling units



within such Planning Unit, as well as phasing, location, infrastructure planning, and public financing plans. Physical size and shape of each Planning Unit will also be dictated by market conditions and engineering studies as development progresses. The boundaries shown in Exhibit 6 may vary and should not be interpreted as the final size or shape of any particular Planning Unit.

Purpose of Planning Unit Plans - The Planning Unit Plans (each a “PUP”) provide a means for the technical review of practical and manageable smaller phased regions based on the design standards identified in Section 4, and the development standards identified in Section 7 (See Section 7.C – Development Standards).

Planning Unit Plan Submittal - Prior to or concurrently with the submittal of the first preliminary plat or site plan within any particular Planning Unit, the Developer will submit a PUP for such Planning Unit. The PUP will contain the ten items listed below. As described five are intended for technical review and approval by the City Engineer and five are intended for review of completeness and compliance with this Final CMP.

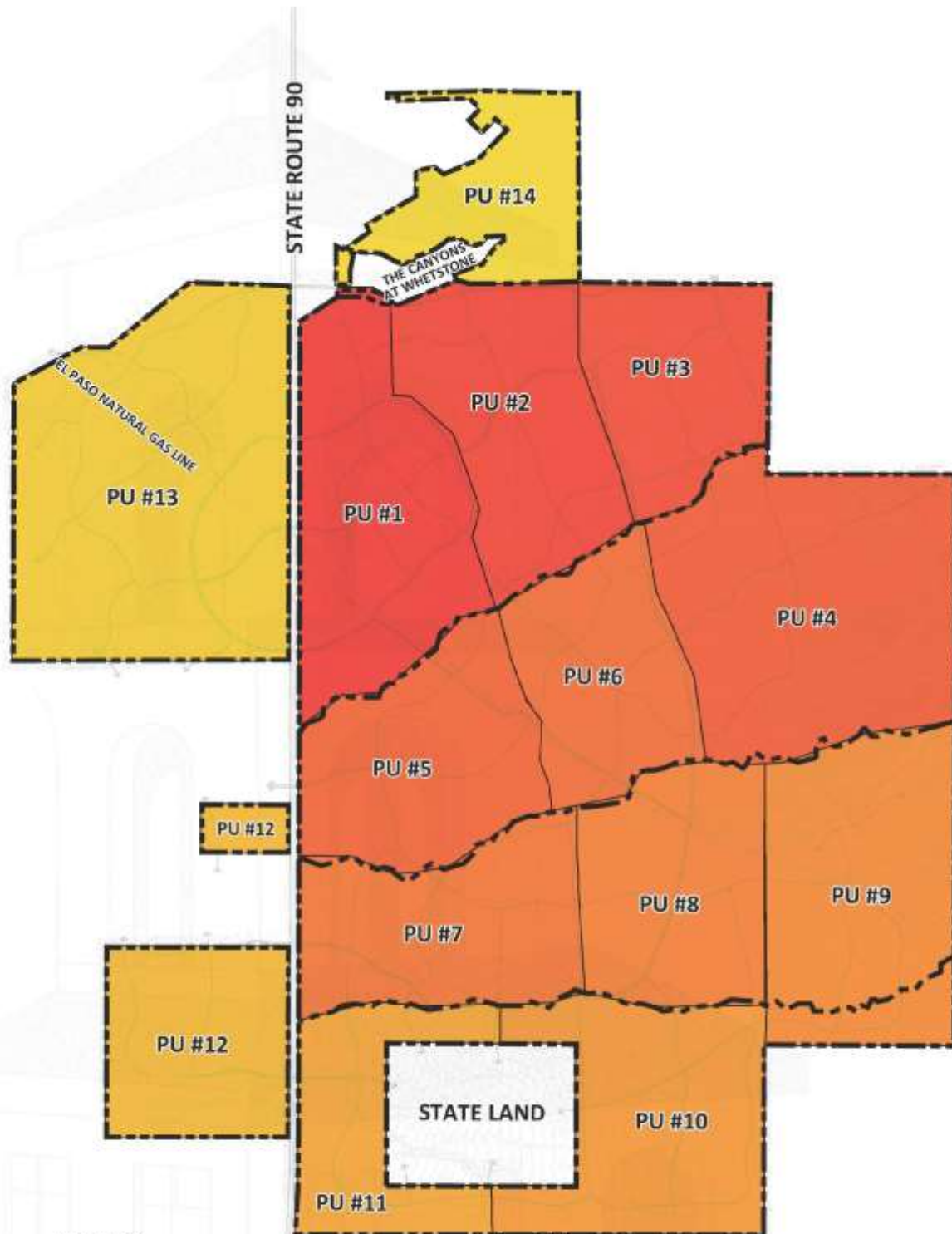
Items to be reviewed and approved by City Engineer:

- 1) **The Potable Water PUMP;**
- 2) **The Sewer PUMP;**
- 3) **The Reclaimed Water PUMP;**
- 4) **The Drainage PUMP**
- 5) **The Traffic Circulation/Transportation PUMP;**

Items to be reviewed for completeness and compliance with Final CMP:

- 6) **A legal description and map** of the Planning Unit boundary;
- 7) **A “bubble” map** that depicts the location of each of the land uses planned within the Planning Unit, including open space and recreational amenities, and a table that explains the density and intensity of such land uses;
- 8) **The land use budget table**, updated to include the density, number and type of dwelling units allocated to previously submitted PUPs and the density and number of dwelling units allocated to the subject Planning Unit;
- 9) **A description of the public facilities** needed within the Planning Unit, per the demand and capacity analyses undertaken pursuant to Section 3 of this CMP;
- 10) **A general layout and description of the Trail System** within each Planning Unit.





LEGEND

	PU #1		PU #2		PU #3		PU #13
	PU #4		PU #5		PU #6		PU #14
	PU #7		PU #8		PU #9		
	PU #10		PU #11		PU #12		

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The Villages at Vigneto

EXHIBIT 6: PLANNING UNITS MAP

3.D Review of Planning Unit Plans

Review of PUP's - Each PUP must be reviewed for completeness and technical conformance with the Final CMP by the City Engineer, the Zoning Administrator, and other City personnel designated by the City Manager as described in the section above.

Upon receipt of a complete PUP, planning or engineering staff shall distribute the submittal to other departments and agencies (as necessary) for review. The review period for the first submittal of each PUP shall be 30 days from the date of submission. The review period for subsequent submittals shall be 14 days from the date of submission.

After each review has been completed, the planning staff will consolidate all review comments/revisions and forward a letter to the applicant regarding the changes to be made or considered. The applicant shall be responsible for addressing all review comments/revisions and submitting the revised PUP to the planning staff.

Approval of PUP's - The City Engineer must approve the Potable Water, Sewer, Reclaimed Water, Drainage, and Traffic Circulation/Transportation Planning Unit Master Plans (each a "PUMP" and collectively the "PUMPS") before any infrastructure plans, plats or site plans may be approved.

Potable Water PUMP - The purpose of each Potable Water PUMP will be to determine the water system facilities and operation to present a detailed plan for water service for the Planning Unit. Each Potable Water PUMP will build off of earlier Potable Water PUMPs as development progresses. Infrastructure that serves multiple Planning Units will be sized and/or phased to provide capacity for the future development.

The following tasks will be performed for preparation of each Potable Water PUMP:

- Calculate average day (ADD), peak day (PDD), peak hour (PHD), and fire flow (FF) demands for both residential and non-residential use based on the land use bubble map in the Planning Unit. Demands and peaking factors will be based on the criteria set forth in the Final CMP.
- Determine location and size of major water infrastructure required both within and outside the Planning Unit boundaries to serve the Planning Unit and future development. Wells, booster stations, reservoirs, and pipelines that serve multiple Planning Units will be sized for the build out capacity or phased based on projected development. Surrounding development demands will be based on the best available information at the time of preparation of the Potable Water PUMP regarding residential and non-residential densities.
- Provide site description for wells, booster stations, and reservoirs including recommendations for types of tanks, boosters, controls, and backup power.
- Provide general water facility site dimensions for planning purposes as well as reservoir diameters and heights based on required storage volume and zoning requirements.



- Develop a hydraulic model of the Planning Unit potable water system to evaluate pipeline size and layout for ADD, PDD, PHD, and Fire Flow conditions. The model will incorporate offsite demands for pipelines that serve multiple Planning Units.
- Coordinate with Montgomery and Associates on location and size of wells to serve the Planning Unit and treatment requirements given physical availability and water quality conditions.
- Research potential potable water treatment options, if required, and forebay storage requirements for treatment. Phasing of treatment and storage facilities will be evaluated based on Planning Unit phasing.
- Provide description of the Planning Unit water system operations and control and how it ties into the overall Final CMP Conceptual Potable Water Master Plan.
- Describe Planning Unit and overall water system infrastructure phasing methodologies.
- Develop preliminary planning-level cost estimates
- Prepare text documents and figures in support of the Potable Water PUMP
- The Potable Water PUMP will be stamped by a registered Professional Engineer in the state of Arizona incorporating the above described items.
- The Potable Water PUMP will include an Exhibit showing proposed facility locations and sizing including wells, water mains, booster stations, and reservoirs
- The Potable Water PUMP will include a Process Flow Diagram showing the movement of source water throughout the zones and system.
- The Potable Water PUMP will include a Preliminary Opinion of Probable Construction Cost for Planning-Level purposes

Wastewater PUMP - The Wastewater PUMP will determine the required wastewater facilities and system operation including gravity sewer mains, lift stations, force mains, and the phasing requirements of the wastewater treatment plant (WWTP) necessary to serve the Planning Unit. Each Wastewater PUMP will build off of earlier Wastewater PUMPs as development progresses. Infrastructure that serves multiple Planning Units will be sized and/or phased to provide capacity for the future development.

The following tasks will be performed for preparation of each Wastewater PUMP:

- Calculate gravity sewer demands and lift station and force main demands (as required) for both residential and non-residential use based on the land use bubble map in the Planning Unit. Demands and peaking factors will be based on the criteria set forth in the Final CMP
- Analyze non-gravity sewer areas for lift station or alternative treatment options
- Determine general location for lift stations and treatment facilities based on topography, roadways, other proposed infrastructure, and future service to additional Planning Units.
- Locate gravity sewer mains and force mains based on topography, roadways, other proposed infrastructure, and future service to additional Planning Units.
- Calculate gravity sewer main, force main, and lift station sizes based on demand and agency requirements. Major collection systems and laterals to serve the Planning Unit will



be sized. Sewer system infrastructure that serves multiple Planning Units will be sized for the build out capacity or phased based on projected development. Surrounding development demands will be based on the best available information at the time of preparation of the Wastewater PUMP regarding residential and non-residential densities.

- Generate preliminary profiles of gravity sewer mains at critical locations to verify adequate depth and slope for required capacity.
- Develop options for systematically phasing and upgrading the WRF for the Planning Unit and future development treatment requirements. Develop design parameters for wastewater treatment system.
- Provide description of the Planning Unit sewer collection and treatment system operations and control and how it ties into the overall Final CMP Conceptual Wastewater Master Plan.
- Describe Planning Unit and overall sewer system infrastructure phasing methodologies.
- Develop planning-level cost estimates.
- Prepare text documents and figures in support of the Wastewater PUMP.
- The Wastewater PUMP will be stamped by a registered Professional Engineer in the state of Arizona incorporating the above described items.
- The Wastewater PUMP will include an exhibit showing proposed facility locations and sizing including gravity mains, force mains, lift stations, and treatment facilities.
- The Wastewater PUMP will include a Preliminary Opinion of Probable Construction Cost for Planning-Level purposes.

Reclaimed Water PUMP - Reclaimed water will be used throughout Villages at Vigneto for turf, landscaping, and aesthetic features. The Reclaimed Water PUMP will determine the facilities necessary to serve turf, landscaping, and aesthetic features within the Planning Unit with reclaimed water from the WRF. Each Reclaimed Water PUMP will build off of earlier Reclaimed Water PUMPs as development progresses. Infrastructure that serves multiple Planning Units will be sized and/or phased to provide capacity for the future development.

The following tasks will be performed for preparation of each Reclaimed Water PUMP:

- Analyze and identify potential reclaimed water users within the Planning Unit including golf courses, right-of-way, schools, parks, recreations facilities, vineyards, and other landscaped facilities.
- Coordinate with golf course designer and/or landscape architect for approaches to utilizing reclaimed water within the Planning Unit for aesthetic features and amenities such as community lakes and streams.
- Calculate average and peak demands for reclaimed water use based on the land use bubble map in the Planning Unit. Demands will be based on the criteria set forth in the Final CMP. Peaking factors will be specific to the reclaimed water use such as golf course, parks, or schools.
- Perform a water balance analysis using the irrigation demands and wastewater generation projections for the Planning Unit to determine recharge and storage needs during the winter months and potable water requirements during summer months for the Planning Unit timeframe based on the proposed absorption schedule. The water



balance for each Planning Unit will be updated to include previously developed Planning Units since available reclaimed water depends on the amount of wastewater generated.

- Determine methodology for potable water supplementation of reclaimed water system during initial phases of Planning Unit development if wastewater flows are minimal.
- Coordinate with Montgomery and Associates to develop methodologies, sizing, preferred locations, and phasing for disposal and recharge of effluent.
- Size, locate, and analyze phasing of the required recharge facilities. These recharge facilities will likely serve multiple Planning Units as development progresses and could be located outside of the Planning Unit boundaries.
- Develop options for aeration to maintain aesthetic qualities of reclaimed water facilities, such as lakes and rivers.
- Determine location and size of major reclaimed water infrastructure required both within and outside the Planning Unit boundaries to serve the Planning Unit and future development. Booster stations, reservoirs, and pipelines that serve multiple Planning Units will be sized for the build out capacity or phased based on projected development. Surrounding development demands will be based on the best available information at the time of preparation of the Reclaimed Water PUMP regarding reclaimed water demands.
- Provide a site description of booster stations, and reservoirs including recommendations for types of tanks, boosters, controls, and backup power.
- Provide general site dimensions for planning purposes as well as reservoir diameters and heights based on required storage volume and zoning requirements.
- Develop a hydraulic model of the Planning Unit reclaimed water system to evaluate pipeline size and layout for average and peak demand conditions. The model will incorporate offsite demands for pipelines that serve multiple Planning Units.
- Provide description of the Planning Unit and overall reclaimed water system operations
- Describe Planning Unit and overall reclaimed water system infrastructure phasing methodologies.
- Develop preliminary planning-level cost estimates.
- Prepare text documents and figures in support of the Planning Unit Reclaimed Water Master Plan.
- The Reclaimed Water PUMP will be stamped by a registered Professional Engineer in the state of Arizona incorporating the above described items.
- The Reclaimed Water PUMP will include an exhibit showing proposed facility locations and sizing including recharge basins, reservoirs, reclaimed mains, and booster stations
- The Reclaimed Water PUMP will include a Water Balance Exhibit showing irrigation demand versus recharged reclaimed water and potable water use
- The Reclaimed Water PUMP will include the Reclaimed Water Process Flow Diagram showing the movement of source water throughout the zones within the Planning Unit and how it ties into the overall reclaimed water system.
- The Reclaimed Water PUMP will include a Preliminary Opinion of Probable Construction Cost for Planning-Level purposes



Drainage PUMP - With each Planning Unit, the specific drainage management concepts and design criteria, including a preliminary evaluation of the onsite stormwater storage facilities, drainage channels, culverts, and other major drainage features within and adjacent to the Planning Unit shall be documented in a Drainage PUMP. The findings of the Drainage PUMP shall serve as the basis for final drainage reports that will be prepared in support of the final construction plans. Items to be specifically documented in each Drainage PUMP are:

- 100-year pre-development design discharges will be determined throughout the Planning Unit and upstream tributary areas. Design flows will also be determined at critical locations within the Planning Unit such as the anticipated intersections between the primary wash corridors and proposed arterial and collector alignments.
- 100-year floodplain limits will be determined throughout the Planning Unit. This analysis will examine the horizontal encroachment limits and vertical design constraints for the Project based on current conditions. The limits of the 100-year floodplain and floodway will be delineated along with appropriate erosion hazard setbacks.
- Preliminary design will be provided for the major elements of the proposed drainage infrastructure. This includes large culvert crossings, channel segments and bank stabilization measures.
- Specific stormwater storage requirements shall be outlined for the Planning Unit. This includes preliminary design for any more regional-type basins that are proposed as well as the specific requirements for the more localized storage facilities.
- A developed conditions hydrologic model which demonstrates that post-development discharges do not exceed pre-development levels along the downstream limits of the Planning Unit.

Traffic Circulation/Transportation PUMP - The Traffic Circulation/Transportation PUMP will include:

- A Traffic Impact Analysis (“TIA”) performed in general accordance with the requirements established by *Developer and the Arizona Department of Transportation, the City of Benson*, locally accepted standards and industry practice. According to the Arizona Department of Transportation, this study will be categorized as a Type II, large multi-phased development. Therefore, the opening year for each phase, 5 years after opening and 15 years after opening will be considered the study horizon periods. As a minimum, all site driveways and all state highways, signalized intersections and major unsignalized street intersections as specified by ADOT, within a minimum of 1 mile around the site will be analyzed. The TIA will include the following components:
 - Site reconnaissance,
 - Data collection,
 - Trip generation,
 - Trip distribution and assignment,
 - Traffic analysis,



- Signal warrant study, and
 - A report that compiles the above acquired data.
- A circulation plan for the Planning Unit that shows locations for arterial and collector roadways and the multi-modal pathways within the Planning Unit.

3.E. Review of Plats and Site Plans

Preliminary Plats - Preliminary plat(s) may be submitted concurrently with or following submittal of the PUP for the portion of the Project within which such preliminary plat(s) are located.

Preliminary Plat Submittal Requirements - Each Preliminary Plat must be to scale (Engineer's Scale) and include the following:

- Identification of plat by name, location, and general legal description.
- Plat dimensions/boundaries, including reference by dimension and bearing to section and quarter section corners.
- Benchmark for subdivision.
- Clearly identify boundary of parcel (s) to be subdivided.
- Complete legal description.
- Date of plat and revision dates.
- Vicinity map and location of plat.
- North arrow and scale (written and graphic).
- Street names and right-of-way dimensions, existing and proposed.
- Name, address, phone, and email for property owner, developer, and engineer/surveyor.
- Site Summary Table with size (gross, net), number of tracts and lots, density, total area of open space.
- Notes section indicating project description, school district, etc.
- Tract table (tract identification and usage).
- Typical lot detail for interior and street-side lots.
- Location of all utilities and recorded/proposed easements.
- Location of all proposed and existing fire hydrants, water supply, storage and pressures.
- Location of all proposed and existing sewer lines, flow arrows showing direction of flow for all proposed sewers and connection location to existing sewer.
- Name of owner of all adjacent un-subdivided property along with respective parcels numbers.
- Name, book, and page number of all adjacent subdivisions.
- Existing contours labeled frequently extending 25' beyond perimeter of Preliminary Plat (1-foot contour intervals should be used).
- Identification of all water and drainage features, existing and proposed



- Conceptual Landscaping Plan
 - Proposed landscaping.
 - Pathways and internal sidewalks.
 - Walls and fences with type and height.
 - List of all plants and method of plant salvage and maintenance.
- Proposed concept lighting plan.
- Conceptual Grading and Drainage Plan.
 - Place “concept” label in seal location.
 - Proposed contour lines.
 - Proposed floor elevation.
 - Proposed site grading with spot elevations.
 - Proposed slopes and heights of berming and proposed depth of retention areas.
 - Show all proposed retaining walls with maximum height.
 - Show location of FEMA floodplains and other flood-prone areas.
 - Arrow diagram showing flow of drainage.
 - Show all washes.
 - Must state “All finish floor elevations are a minimum of one (1) foot above the 100-year storm water surface elevation.”
 - Preliminary detail all drainage structures including culverts, channels, berms, etc.
 - Cross sections of site as necessary.

Block Approval of Preliminary Plat - With approval of the Planning Administrator, applicant may desire to create the preliminary plat showing streets and “lot blocks”. This will allow the applicant to receive approval of preliminary plat and leave the flexibility of placing individual lot lines at creation of the final plat. This provision will allow applicant to choose lot widths dependent on market demands.

Licensed Arizona Registrant - Each preliminary plat must be prepared by a licensed Arizona registrant. The Developer must submit 8 copies (24” x 36”) of each preliminary plat, together with the completed application form, a title report (dated within 30 days of submittal), and applicable review fees. Concurrently with the submittal of each preliminary plat, the Developer must also submit a Conceptual Landscaping Plan (3 copies), a Conceptual Grading and Drainage Plan (3 copies), and preliminary offsite drainage report prepared by a qualified Arizona-licensed engineer (3 copies).

Preliminary Plat Procedural Process - Upon receipt of a complete application, planning staff shall distribute the submittal to other departments and agencies (as necessary) for review. The review period for the first submittal shall be 14 days from the date of submission. The review period for subsequent submittals shall be 7 days from the date of submission.

After each review has been completed, the planning staff will consolidate all review comments and forward a letter to the applicant indicating the necessary revisions. The applicant shall be



responsible for addressing all review comments and submitting revised plans to the planning staff.

Planning & Zoning Approval of Preliminary Plat - Once planning staff has determined that the proposed preliminary plat is in compliance with all City requirements, the planning staff will prepare a staff report describing and evaluating the proposed preliminary plat and place it on the agenda of the next scheduled Planning and Zoning Commission meeting.

Upon approval by the Planning & Zoning Commission, the preliminary plat will be deemed approved and the applicant can proceed to creation of a final plat.

Expiration of Preliminary Plat - The preliminary plat approval expires two years from the date of approval if a final plat for all or a portion of the property subject to the preliminary plat has not been approved and recorded within this period. Extension policy for non-phased, and phased subdivisions are as follows:

- **Non-phased** - For non-phased subdivisions, up to a 24 month time extension may be granted provided there have been no changes in City regulations applicable to the proposed subdivision since the approval of the Preliminary Plat; or,
- **Phased** - For phased subdivisions, up to a 24 month time extension for each phase of a Preliminary Plat being platted and recorded in phases, provided there have been no changes in City regulations applicable to the proposed subdivision since the approval of the Preliminary Plat phase under consideration.

Final Plat Submittal Requirements - Each final plat must comply with the following submittal requirements:

- The final plat shall substantially conform to the approved preliminary plat, and shall be prepared by or under the direction of an Arizona registered land surveyor.
- If desired by applicant, the final plat may constitute only that portion of the approved preliminary plat which applicant proposes to record and develop.
- The final plat shall be drawn on a sheet of 24 inches by 36 inches proportions, suitable for recording.
- A Title sheet shall be required as part of the final plat submittal and shall include the following data:
 - The name of the subdivision and its location by number of section, township, range, and county, shown graphically;
 - Name, address and registration number of the Arizona registered land surveyor preparing the plat;
 - Scale, north arrow, Legend of symbols abbreviations and line types and date of plat preparation.
 - A certification by the registered land surveyor certifying that the plat is correct and accurate and that the monuments shown have been located as described.



- A statement of dedication of all streets, alleys, drainage ways, pedestrian ways, and other easements for public use by the person holding title of record, by persons holding title as vendees under land contract and by spouses of said parties. If lands dedicated are mortgaged, the mortgagee shall sign the plat. Dedication shall include a written location by section, township, and range of the tract. If the plat contains private streets, public utilities shall be reserved the right to install and maintain utilities in the street rights-of-way.
- Where there are temporary easements, landscaped easements and/or utility easements that are to be vacated (removing any City interest in the easement) they can be shown on the plat and described as such. A roadway right-of-way or easement can be placed on the plat for abandonment only if the requirements of State law are met concurrently with Council approval.
- Execution of dedication acknowledged and certified by a notary public.
- Subdivision sheets shall be required as part of the final plat submittal, drawn to 1"=40' scale including the following survey data and support documents.
 - Boundaries of the property to be subdivided will meet the requirements of the Arizona Boundary Survey Minimum standards, fully balanced and closed, with detailed description of controlling monuments, showing all bearings and distances, determined by an accurate survey in the field. All dimensions shall be expressed in feet and decimals thereof;
 - Existing right of way boundaries of all public streets and alley ways, and easements which affect the property;
 - Any excepted parcel within the plat boundaries shall show all bearings and distances, determined by an accurate survey in the field. All dimensions shall be expressed in feet and decimals thereof;
 - Location of all physical encroachments upon the boundaries of the property;
 - Name and right-of-way boundaries of all public streets and alley ways showing:
 - Street widths
 - Courses and length of all tangent segments.
 - Radii, arc lengths, and central angles of all curvilinear segments.
 - The right-of-way for all proposed drainage ways, as approved by the City of Benson, shall be dedicated to the public;
 - Location and all dimensions of all lots;
 - All lots shall be numbered consecutively throughout the plat. "Exceptions," "tracts," and "private parks" shall be so designated, lettered, or named and clearly dimensioned;
 - Location, dimensions, bearings, radii, arcs, and central angles of all sites to be dedicated to the public with the use clearly indicated;
 - "Lot", "Private Parks" and "Tract" areas shown on the plat; Acres rounded to the hundredth of an acre; Square feet rounded to the square foot.



- Location of all adjoining subdivisions and un-subdivided properties adjacent to the subdivision, graphically shown, with date, book, and page number of recordation noted, or if unrecorded, so marked;
- Any proposed private deed restrictions to be imposed upon the plat or any part or parts thereof pertaining to the intended use of the land shall be typewritten and attached to the plat and to each copy submitted; and
- All new monuments placed at subdivision corners, easement corners and lot corners, shall conform to the requirements of the Arizona Boundary Survey Minimum standards, including the surveyor's Arizona registration number thereon and shall provide a degree of permanency consistent with that of adjacent terrain and physical features.
- Centerline intersections of public road rights of ways shall be marked with a brass cap in monument well, according to the Pima Association of Governments (PAG) Survey Marker Detail 103. Points of curvature of public road rights of ways shall be marked with a brass cap in concrete according to (PAG) Survey Marker Detail 103.
- In addition to the final plat and applicable review fees, the following documents must be submitted under separate plan set and separate fee (3 copies each):
 - Final Landscape Plan
 - Engineering Documents:
 - Final Drainage Report
 - Traffic Impact Analysis
 - Phase 1 Environmental Study
 - Water Report
 - Sewer Report
 - Final Utilities Plans (Water and Sewer)
 - Final Paving, Signing, and Striping Plans
 - Final Grading Plans, including Soils Engineering Report
 - Stormwater Pollution Prevention Plan (SWPP)
 - ADEQ Notice of Intent Certificate

Final Plat Procedural Process - Upon receipt of a complete application, the planning staff will distribute the submittal to other departments and agencies (as necessary) for review. The typical review period for the first submittal is 14 days from the date of submission. The review of subsequent submittals is typically completed within 7 days.

After each review has been completed, the planning staff will consolidate all review comments and forward a letter to the applicant indicating the necessary revisions. The applicant shall be responsible for addressing all review comments and submitting revised plans to the planning staff.



Planning and Zoning Approval of Final Plat - Once planning staff has determined that the proposed final plat is in compliance with all City requirements, the planning staff will prepare a staff report describing and evaluating the proposed Final Plat and place it on the agenda of the next regularly scheduled Planning & Zoning Commission meeting. Upon approval and signature by the Planning & Zoning Commission, the final plat shall be forwarded to the City Council and placed on the agenda of the next regularly scheduled City Council meeting.

Upon approval of the final plat by the City Council, the City Clerk and Mayor shall certify the action. All required signatures shall be obtained on the original coversheet. The final plat will be recorded in the Office of the Cochise County Recorder and the applicant/owner will be responsible for the payment of all recording fees.

Approval of the final plat shall not constitute acceptance for construction of streets or utilities related to the development.

Changes to the approved final plat shall require the same procedures as outlined above.

Grading Permit - At the discretion of the City Engineer, once the first review of the Engineering Documents (referenced above) is completed, he/she may allow for the Developer to proceed with at-risk grading permits. An At-Risk Grading and Drainage Plan may be approved as a convenience to the Developer. The City Engineer is not obligated to approve an At-Risk Grading and Drainage Plan. The permit may be revoked if timely progress is not made toward final Grading and Drainage Plan approval. At-Risk Grading and Drainage plans are approved to allow rough grading only. Trenching, digging dry wells or fine grading is not allowed as part of the At-Risk Grading and Drainage Plan approval. The Engineer of record shall work earnestly toward completing the full Grading and Drainage Plan approval while the At-Risk Grading and Drainage plans are in use or the At-Risk Grading and Drainage permit may be revoked. At-Risk Grading and Drainage permit fees are the same fees as the full Grading and Drainage permit fees.

Site Plans - Site Plan(s) may be submitted concurrently with or following submittal of the PUP for the portion of the Project within which such Site Plan(s) are located. A site plan approved by the Planning and Zoning Commission or the Community Development Director, shall be considered the primary condition for the establishment of any building, or structure to be constructed on a development site, except for residential subdivisions which utilize the Preliminary Plat process and multi-family residences consisting of less than five units per lot, which will be handled with a site plan submitted to the Zoning Inspector in conjunction with the building permit application.

Site Plan Submittal Requirements - Each Site Plan must be to scale (Engineer's Scale) and address the following:

- Identification of site plan by name, location, and general legal description.
- Plat dimensions/boundaries, including reference by dimension and bearing to section and quarter section corners.
- Benchmark for site plan.
- Clearly identify boundary of any parcel (s) to be subdivided.



- Complete legal description.
- Date of site plan and revision dates.
- Vicinity map and location of site plan.
- North arrow and scale (written and graphic).
- Street names, alleys, easements and right-of-way dimensions, existing and proposed.
- Location of all existing abutting and on-site improvements such as pavement, sidewalks, curbs and curb cuts, gutters, storm and or drainage structures.
- Location, sizes, and shape of all proposed and existing buildings and structures.
- Name, address, phone, and email for property owner, developer, and engineer/surveyor.
- Site Summary Table with size (gross, net), number of tracts, total area of open space.
- Notes section indicating project description, school district, etc.
- Tract table (tract identification and usage).
- Location of all utilities and recorded/proposed easements.
- Location of all proposed and existing fire hydrants, water supply, storage and pressures.
- Location of all proposed and existing sewer lines, flow arrows showing direction of flow for all proposed sewers and connection location to existing sewer.
- Name of owner of all adjacent un-subdivided property along with respective parcels numbers
- Name, book, and page number of all adjacent subdivisions.
- Existing contours labeled frequently extending 25' beyond perimeter of Preliminary Plat (1-foot contour intervals should be used).
- Identification of all water and drainage features, existing and proposed
- The Conceptual Landscaping Plan must contain the following:
 - Proposed landscaping.
 - Pathways and internal sidewalks.
 - Walls and fences with type and height.
 - List of all plants and method of plant salvage and maintenance.
- Proposed concept lighting plan.
- The Conceptual Grading and Drainage Plan must contain the following:
 - Place "concept" label in seal location.
 - Proposed contour lines.
 - Proposed floor elevation.
 - Proposed site grading with spot elevations.
 - Proposed slopes and heights of berming and proposed depth of retention areas.
 - Show all proposed retaining walls with maximum height.
 - Show location of FEMA floodplains and other flood-prone areas.
 - Arrow diagram showing flow of drainage.
 - Show all washes.
 - Must state "All finish floor elevations are a minimum of one (1) foot above the 100-year storm water surface elevation."
 - Preliminary detail all drainage structures including culverts, channels, berms, etc.
 - Cross sections of site as necessary.



Licensed Arizona registrant - Each Site Plan must be prepared by a licensed Arizona registrant. The Developer must submit two (2) copies (24" x 36") and twelve (12) copies (11"x17") of each Site Plan, together with the completed application form, a title report (dated within 30 days of submittal), and applicable review fees. Concurrently with the submittal of each Site Plan, the Developer must also submit a Conceptual Landscaping Plan (3 copies), a Conceptual Grading and Drainage Plan (3 copies), and preliminary offsite drainage report prepared by a qualified Arizona-licensed engineer (3 copies).

The Conceptual Landscaping Plan must contain the following:

- Proposed landscaping.
- Pathways and internal sidewalks.
- Walls and fences with type and height.
- List of all plants and method of plant salvage and maintenance.
- Proposed concept lighting plan.

The Conceptual Grading and Drainage Plan must contain the following:

- Place "concept" label in seal location.
- Proposed contour lines.
- Proposed floor elevation.
- Proposed site grading with spot elevations.
- Proposed slopes and heights of berming and proposed depth of retention areas.
- Show all proposed retaining walls with maximum height.
- Show location of FEMA floodplains and other flood-prone areas.
- Arrow diagram showing flow of drainage.
- Show all washes.
- Must state "All finish floor elevations are a minimum of one (1) foot above the 100-year storm water surface elevation."
- Preliminary detail all drainage structures including culverts, channels, berms, etc.
- Cross sections of site as necessary.

Site Plan Procedural Process - Upon receipt of a complete application, planning staff shall distribute the submittal to other departments and agencies (as necessary) for review. The review period for the first submittal shall be 14 days from the date of submission. The review period for subsequent submittals shall be 7 days from the date of submission.

After each review has been completed, the planning staff will consolidate all review comments and forward a letter to the applicant indicating the necessary revisions. The applicant shall be responsible for addressing all review comments and submitting revised plans to the planning staff.

Planning and Zoning or Planning Director Approval of Site Plan - The Community Development Director shall be authorized to review and approve Site Plans submitted in conjunction with the



establishment of any building, structure or use involving improvements having a valuation of less than \$20,000.00. For Site Plans with a valuation of \$20,000 or greater, the Planning & Zoning Commission shall have the authority to approve.

Once planning staff has determined that the proposed Site Plan is in compliance with all City requirements, the planning staff will approve Site Plans for improvements under \$20,000.00; and prepare a staff report for Site Plans for improvements exceeding \$20,000.00 describing and evaluating the proposed Site Plan and place it on the agenda of the next scheduled Planning and Zoning Commission meeting.

Upon approval by the Planning & Zoning Commission, the Site Plan will be deemed approved.

Expiration of Site Plan - The Site Plan approval expires two years from the date of approval and may be extended for 24 months from the expiration date of original approval by the Commission upon written request from the developer, 30 days prior to expiration of original approval.

Final CMP Demand and Capacity Analysis -The Demand and Capacity Analysis of the Villages at Vigneto Final CMP is summarized by forecasted Direct, Indirect, and Induced Output as summarized by the common element of Job created by business Sector. Job creation by Sector is used to establish a benchmark of needed services, facilities, and workspace for the population that is the underlying reason for those jobs.

Robert Carreira, Ph.D. was retained to study the Impact of The Villages at Vigneto Final Community Master Plan and Development Plan. Projections of direct, indirect, and induced output and jobs are made using the Regional Input-Output Modeling System (RIMS II) developed by the U.S. Bureau of Economic Analysis (www.BEA.gov).



The table summarized below identifies the Industry Sectors, and corresponding jobs created as the project is constructed, and also presents the total jobs, permanently established after The Villages at Vigneto is fully developed.

Projected Economic Impacts and Job Creation	Output during Construction Spending/Sales (Gross Total)	Output after Construction Spending/Sales (Annually)	(Peak) Jobs Created during Construction (Full-time)	(Sustained) Permanent Jobs post Development (Full-Time)
Agri, Forestry, Fishing, and Hunting	\$ 135,815,585	\$ 11,573,540	131	107
Mining	\$ 81,721,025	\$ 734,828	12	1
Utilities	\$ 565,883,867	\$ 48,866,060	90	74
Construction	\$ 9,836,791,268	\$ 9,736,471	5505	76
Manufacturing	\$ 454,809,820	\$ 13,410,610	159	48
Wholesale Trade	\$ 212,514,261	\$ 15,431,387	93	68
Retail Trade	\$ 2,355,681,720	\$ 193,627,170	2704	2149
Transportation and Warehousing	\$ 240,348,401	\$ 16,717,336	188	137
Information	\$ 814,274,344	\$ 68,155,294	241	194
Finance and Insurance	\$ 644,011,141	\$ 57,132,875	264	223
Real Estate, Rental and Leasing	\$ 2,725,855,252	\$ 257,924,617	981	857
Prof Serv, Scientific, and Tech Serv	\$ 924,759,562	\$ 36,925,105	708	325
Mgmt of Co. and Enterprise	\$ 20,563,441	\$ 1,469,656	14	10
Admin & Waste Mgmt Services	\$ 286,802,055	\$ 19,472,941	373	258
Educational Services	\$ 277,805,426	\$ 26,453,807	397	349
Health Care and Social Assistance	\$ 2,206,310,881	\$ 210,711,920	2076	1825
Arts, Entertainment, and Recreation	\$ 133,480,809	\$ 14,492,075	238	206
Accommodation	\$ 212,894,790	\$ 19,105,527	174	147
Food Services and Drinking Places	\$ 888,693,708	\$ 82,851,853	1405	1216
Other Services	\$ 755,994,598	\$ 68,522,708	602	511
All Industries	\$23,775,011,954	\$1,173,315,780	16355	8780



4. Master Planning and Design Standards

Community Design Standards are not to be confused with “Land Use & Development Standards” (See Section 7 – Land Use and Development Standards). Land Use and Development Standards within this Final CMP are categorized and pertain to zoning related topics that handle matters such as (but not limited to) permitted uses, conditional uses, setbacks, lot coverage, building heights, and other planning and zoning related matters. This section provides guidelines for the planners and engineers to apply the Land Use and Development Standards in Section 7 to Opportunities and Constraints examined in Section 2 to complete detailed construction plans.

4.A Master Planning

The master plans found in this section will take into consideration the following items when construction or improvement plans are designed within each Planning Unit:

Styling of Community - The design philosophy that establishes the overall theme for the Project is discussed in section 3 above. The detailed land planning, design and engineering for the Project shall consider master planning principles for each Planning Unit and establish continuity and consistency with Old World Architectural styling. This may be achieved through consistency of a themed design concept that threads aesthetics into (but not limited to) land planning & parcel locations, land development improvements, architectural building design, and landscaping (plantings and hardscapes).

Master Plan Dynamics and Functional Considerations - Overall land planning considerations may include: master trails, an open space plan, a natural open space plan, a recreational use plan, HOA managed recreation centers, connectivity to all major uses within the Project, commercial centers, retail centers, clubhouses, town centers, resorts, outdoor amphitheaters, major gathering places, public civic facilities (potential libraries, theaters, museum, arts, and public buildings) and municipal services structures among others. Additional civic use facilities shall be considered including but not limited to location of elementary, middle and high schools, post-secondary schooling, technical college, and other training facilities; and various types of health care facilities, including hospitals, clinics, walk in medical centers, treatment centers, outpatient services, elderly living center, wellness center(s), extended health, and hospice. The detailed planning of each Planning Unit shall consider how all of those items influences each other’s functionality individually and as a whole.

Public Works, and Utility Planning - The land planning of each Planning Unit shall integrate all necessary municipal public works, and other utility services including locations of all civic maintenance yards, water, sewer, effluent, recharge, treatment, pumping, electrical, gas utilities, telephone, cable, and other communication services.

Planning for Future Technology - The detailed planning of each Planning Unit may consider, to the extent that new technology advancements in the future provide alternative methods of energy, alternative communication methods, logistics, advanced delivery systems, or any other form of advanced technology. The detailed planning of each Planning Unit may integrate new



technology as the Developer sees fit.

Contingency Planning - The detailed planning of each Planning Unit shall consider and establish contingency and alternative access for emergency services including: police, life safety, evacuation, fire protection, and ambulatory services. As improvement plans or construction plans are submitted to the City of Benson for approval, emergency access during construction and after build-out of any phase within a Planning Unit will be reviewed and approved by the City Engineer, Public Works Director and/or Fire Chief.

Emergency Services - The emergency services including timing, phasing, size, and location within the initial phases of the first Planning Unit will be agreed to between the Developer and the City of Benson prior to the issuance of building permits for construction of any occupied space. Temporary structures are allowed to serve this purpose. Temporary or permanent structures are not required for this purpose for the first phase of development. Timing of installation of will be agreed to between the developer and City.

Architectural Elements - Land development and architectural elements to be encouraged to be planned and integrated by developer shall consider architectural treatment and location of: monumentation (See Exhibit 13: Monument Master Plan), signage (See Exhibit 14: Signage Master Plan), a “dark skies” lighting plan, furnishings, electrical fixtures (street lights, and pathway lighting), landscaping and planting patterns, hardscaping of outdoor amenities, roadway textures, bridge designs, featured architectural land marks (such as spires or campanile’s), roadway design, the Trail System and the variety of land uses within the 350-foot wide Community Multi-Use Corridor along the existing Kinder Morgan Natural Gas Pipeline. (See Section 4.A.i – Kinder Morgan Natural Gas Pipeline Corridor (Community Multi-Use Corridor)).

Community Engineering - Project Master Plans are required by the City as part of the Final CMP approval and provide project-wide infrastructure plans for Vigneto. The following, which set forth the Conceptual Stormwater Plan, Conceptual Potable Water Plan, Conceptual Wastewater Plan, Conceptual Reclaimed Water Plan and the Conceptual Traffic Circulation Plan, are incorporated into this Final CMP by this reference as if set forth in full herein. Changes to and refinements of the Project Master Plans shall be submitted to the City Engineer as Planning Unit Plans required pursuant to Section 3.

4.A.i Kinder Morgan Natural Gas Pipeline Corridor (Community Multi-Use Corridor)

Existing 20 foot wide Gas Pipeline Easement - An existing 20-foot gas pipeline easement in favor of Kinder Morgan contains a high-pressure gas pipeline and diagonally crosses the Land from the southeast corner of the property to the northwest corner of the property. The existing 20 foot wide easement will be abandoned and replaced by a new 40 foot wide Gas Pipeline Easement.

New 40 foot wide Gas Pipeline Easement - A new easement at least 40-foot wide overlaying the



gas pipeline will be granted to Kinder Morgan and replace the outdated existing 20-foot wide gas pipeline easement. The new 40-foot gas pipeline easement will be used by Kinder Morgan, and or regulatory agencies that govern the use of the gas pipeline to operate and maintain the gas pipeline as long as the gas pipeline remains in place. Currently the U.S. Department of Transportation, “Pipeline and Hazardous Materials Safety Administration – Office of Pipeline Safety,” regulates the use and maintenance of this existing gas pipeline.

350 foot wide Community Multi-Use Corridor Easement - In addition to and beyond the limits and width of the 40 foot wide easement, El Dorado will establish a permanent easement called the “Community Multi-Use Corridor Easement” to be initially recorded in the favor of El Dorado Benson, LLC, and or assignees. This new Community Multi-Use Corridor Easement will be approximately 350 feet in width and the gas pipeline will be located approximately in the middle of the easement. The 40 foot wide gas pipeline discussed in the chapter above will be incorporated inside this Multi Use Corridor Easement. The Pipelines and Informed Planning Alliance (“PIPA”), Final Report of Recommended Practices, November 2010 has been a guideline in determining best management practices for new developments around the nation, and The Villages at Vigneto will apply the principles, and guidelines to the development in a practical manner. The permitted uses and non-permitted uses within the Community Multi-Use Corridor Easement will be fully described in the final recorded easement; however the following Permitted uses and non-permitted uses shall be included in the easement:

350 foot wide Community Multi-Use Corridor Easement Permitted Uses - The following uses are permitted in the Community Multi-Use Corridor Easement:

- All open space uses, including but not limited to: existing natural open space, developed open space, golf, playing fields, trails and agricultural fields, and vineyards,
- Paths, Trails, Multi-Modal Paths, Regional trails, and all levels of networks of trail systems designated for pedestrians, bicycles, Low Speed Vehicles (max 25mph), Neighborhood Electric Vehicles, and other devices intended for trails, paths, and Multi-Modal Pathways,
- Right-of-ways, Arterial Road, Collector Roads, Local roads, and utility easements,
- Maintenance Roads, and pathways,
- Recreational facilities including playing fields, courts, bowling allies, baseball fields, swimming pools, swimming lakes,
- Worship centers are permitted uses, so long as day care, or elderly care within the worship center is not within the 175-foot setback area,
- Parking and parking structures,
- Agri-business crops
- Storage Facilities,
- Agricultural processing is a permitted use, including wineries, and wine tasting,
- Golf clubhouses,
- Golf courses,
- Playing fields, running tracks, football fields, soccer, baseball or any other large human oriented playing fields, including those associated with any type of educational facility,
- Outdoor Festivals, excluding any festivals associated with automobiles, or guns and ammunition are not permitted within the Multi-Use Corridor Easement,



- Office space, commercial retail centers, and mixed-use development are permitted uses, as long as they do not contain any of the “Non-Permitted” uses below.

350 foot wide Community Multi-Use Corridor Easement Non-permitted Uses - The following uses are not permitted in the Community Multi-Use Corridor Easement:

- Shooting Ranges,
- Car shows,
- Elementary Schools,
- Middle Schools,
- High Schools,
- College or University Campus,
- Permanent overnight residential housing with the exception of, housing designated as “temporary housing” for work-forces, during the course of construction of the Project,
- Day Care centers,
- Outpatient centers,
- Elderly care homes.

All improvements planned within the Community Multi-Use Corridor Easement, will be required to obtain all necessary permits and approvals from all Jurisdictions having authority.

4.A.ii Conceptual Stormwater Management Master Planning

Existing Conditions - The offsite watershed for Vigneto originates in the Whetstone Mountains, which rise above the western boundary of the Project. Runoff from this offsite watershed is concentrated into a series of natural washes or wash corridors that convey flows easterly. This runoff is passed beneath SR-90 through a system of culvert crossings. Beyond SR-90 these wash corridors continue on through Vigneto toward the San Pedro River.

The natural washes vary in width and depth, but generally consist of a sandy bottom and relatively heavily vegetated banks. In the upper and lowermost reaches of the drainage system the primary washes are separated by prominent ridgelines. Throughout most of the Project’s interior, the vertical separation between the channel bottoms and ridgelines is less significant. While there are isolated cases of distributary flow, the drainage system is predominantly tributary.



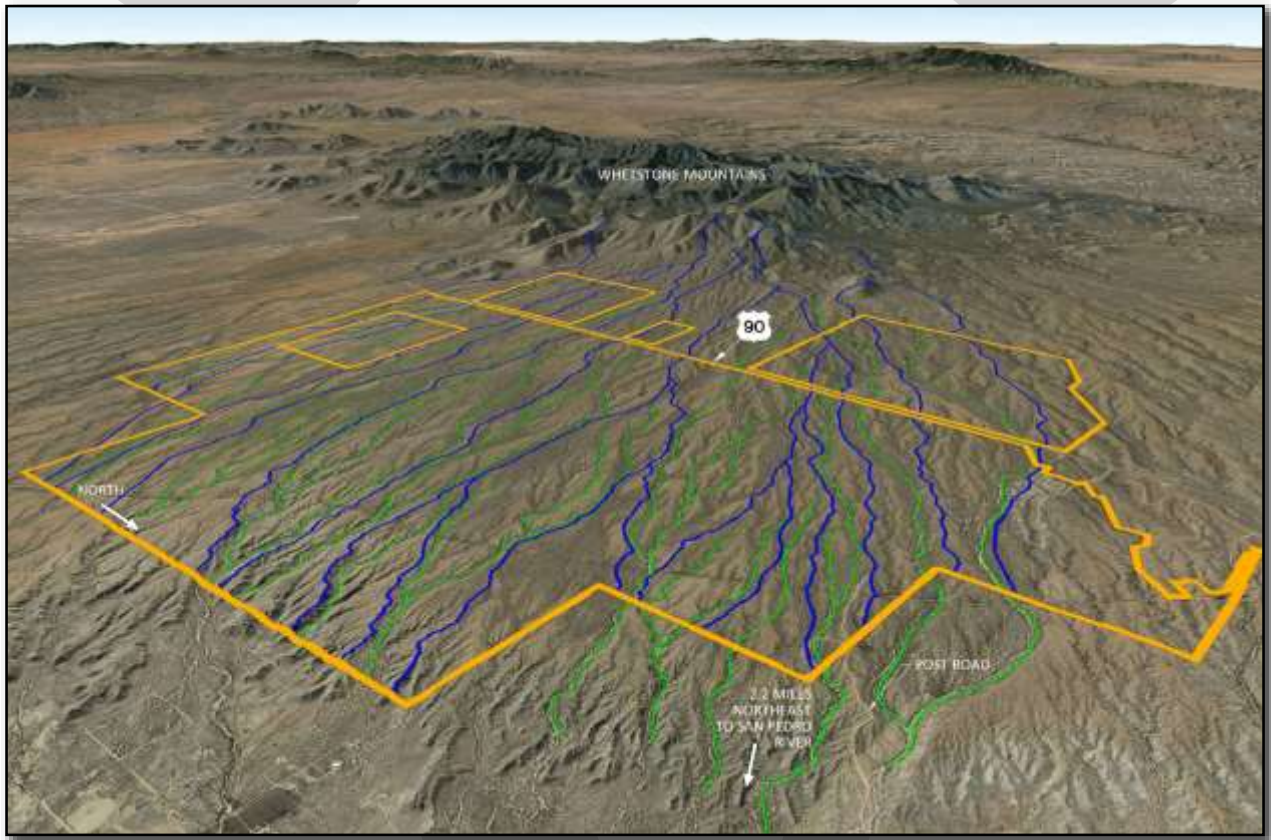


Illustration 2 – Existing Stormwater Overview Exhibit

Based on observations made at the site and surrounding area it is evident that the natural drainage ways that traverse the Project property carry a relatively high sediment load. The channel beds and banks are generally stable, but in some locations both vertical and horizontal channel movement can be observed across the site.

Federal Emergency Management Agency - (“FEMA”) Flood Insurance Rate Map (“FIRM”) coverage for the site is provided on FIRM panels 04003C1245F, 04003C1550F and unprinted panel 04003C1240F all of which are dated August 28, 2008. According to the printed FIRM panels, the Project property resides entirely within flood hazard Zone X. FEMA defines this flood hazard zone as follows: “Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile.”

Stormwater Management Overview - Onsite stormwater management will in large part capitalize on the natural terrain and features of the existing drainage system. The proposed drainage infrastructure consists of washes, culverts, street drainage networks and retention and/or detention basins. Proposed development will be protected from the 100-year flood. Runoff from disturbed or developed areas may drain directly to the washes where appropriate and necessary, such as for lots graded to slope away from streets, but will generally be routed to improved stormwater treatment or storage (retention/detention) facilities. The stormwater



management facilities will all be designed in concert to limit post-development drainage flows leaving the Vigneto property to be at or below the pre-development levels as determined by the onsite and offsite hydrologic evaluation. Applicable stormwater quality requirements will continue to be observed (See Exhibit 7: Conceptual Stormwater Plan). The following sections describe the primary components of the Project's drainage system in more detail. Additionally, the Conceptual Stormwater Management Overview provides an overview of what the Project's drainage system may look like.

This narrative represents an overview of the general approaches and design criteria that will be utilized for the Villages. With each Planning Unit, the specific drainage management concepts and design criteria, including a preliminary evaluation of the onsite stormwater storage facilities, drainage channels, culverts, and other major drainage features within and adjacent to the Planning Unit shall be documented in a Drainage PUMP. The findings of the Drainage PUMP shall serve as the basis for final drainage reports that will be prepared in support of the final construction plans. Items to be specifically documented in each Drainage PUMP are:

- 100-year pre-development design discharges will be determined throughout the Planning Unit and upstream tributary areas. Design flows will also be determined at critical locations within the Planning Unit such as the anticipated intersections between the primary wash corridors and proposed arterial and collector alignments.
- 100-year floodplain limits will be determined throughout the Planning Unit. This analysis will examine the horizontal encroachment limits and vertical design constraints for the Project based on current conditions. The limits of the 100-year floodplain and floodway will be delineated along with appropriate erosion hazard setbacks.
- Preliminary design will be provided for the major elements of the proposed drainage infrastructure. This includes large culvert crossings, channel segments and bank stabilization measures.
- Specific stormwater storage requirements shall be outlined for the Planning Unit. This includes preliminary design for any more regional-type basins that are proposed as well as the specific requirements for the more localized storage facilities.
- A developed conditions hydrologic model which demonstrates that post-development discharges do not exceed pre-development levels along the downstream limits of the Planning Unit.





Illustration 3 – Conceptual Stormwater Management Overview Exhibit

Wash Corridors - An existing conditions hydrologic evaluation of the watershed affecting the Project is currently underway. Through this analysis, 100-year design flowrates will be determined at the upstream and downstream limits of the site. Based on these discharges and the topographic mapping that is available for the property, a hydraulic analysis will also be completed to determine floodplain and floodway limits for the Project’s system of natural wash corridors. This analysis shall be completed according to the methodologies outlined by the Pima County Regional Flood Control District (PCRFCD) and the Arizona Department of Water Resources (ADWR). ADWR State Standard 2-96 establishes standards for delineation of floodplains and floodways in riverine environments, and for use in floodplain management in Arizona. Part of this requirement is determining what size watercourse will be delineated. This requirement generally states that all washes with an upstream watershed of more than $\frac{1}{4}$ of a square mile or a 100-year estimated flow rate of more than 500 cfs. will be delineated. Given the abundance of more minor washes within the Project, and in accordance with City of Benson standard practice, all washes conveying 100-year estimated flow rates of 100 cfs. or more shall be delineated with regulatory floodplains. These regulatory floodplains limits shall be managed in accordance with PCRFCD standards. Encroachments into, or realignment of, the regulatory floodplain limits shall be permissible with provision of adequate engineered controls (ex. channelization, bank stabilization, etc.).

Future drainage studies used to support grading design shall also include a determination of the Erosion Hazard Setbacks (“EHS”) for all delineated washes within the Project. Determination of the EHS limits shall be conducted in accordance with PCRFCD guidelines, or the ADWR standards that they reference. Generally, limited development will occur within the delineated floodway. However, if development is proposed between the floodway limit and this minimum setback, bank protection must be provided, unless it can be proven through more detailed geotechnical



and/or hydraulic analyses that the natural bank will be stable under 100-year flow conditions. Finished floor elevations for habitable structures adjacent to the washes will be set at least one foot above the respective 100-year water surface elevations.

Stormwater Retention/Detention Facilities - The primary constraint of the post-development drainage design is to maintain flow rates at the outfall points to equal to or less than the flow rates for historic conditions. In order to offset the anticipated addition of impervious area within the Project's watersheds, stormwater retention and detention facilities will be implemented. These Project's retention and detention facilities will generally be designed in accordance with the methodologies outlined by the PCRFCDC. The facilities may include local retention or detention basins or quasi-regional (watersheds less than 100 acres) in-line or offline retention/detention basins.

Due to the scale of the Project, regional retention/ detention basins (online or offline) may be appropriate for stormwater management in addition to or in lieu of local basins. Regional parks, recharge facilities or adjacent washes could be utilized for these types of regional basin systems. Approval of regional basins will be subject to the City Engineer's review.

The preferred method for dewatering retention basins shall be gravity discharge (bleed-off) to adjacent drainage-ways. Other secondary dewatering options include natural infiltration and drywells. All retention/detention basins with watersheds of 10 acres or less shall empty within 12 hours after the runoff-producing event has ended. Basins having watersheds greater than 10 acres shall be dewatered in less than 24 hours. For high-water discharge, riprap-lined spillway structures or other structures may be used.

Roadway Crossings - Roadways will be developed with stormwater conveyance facilities to safely pass stormwater runoff. In some cases, these drainage structures may also serve to provide a grade-separated means for pedestrian and cart crossings.

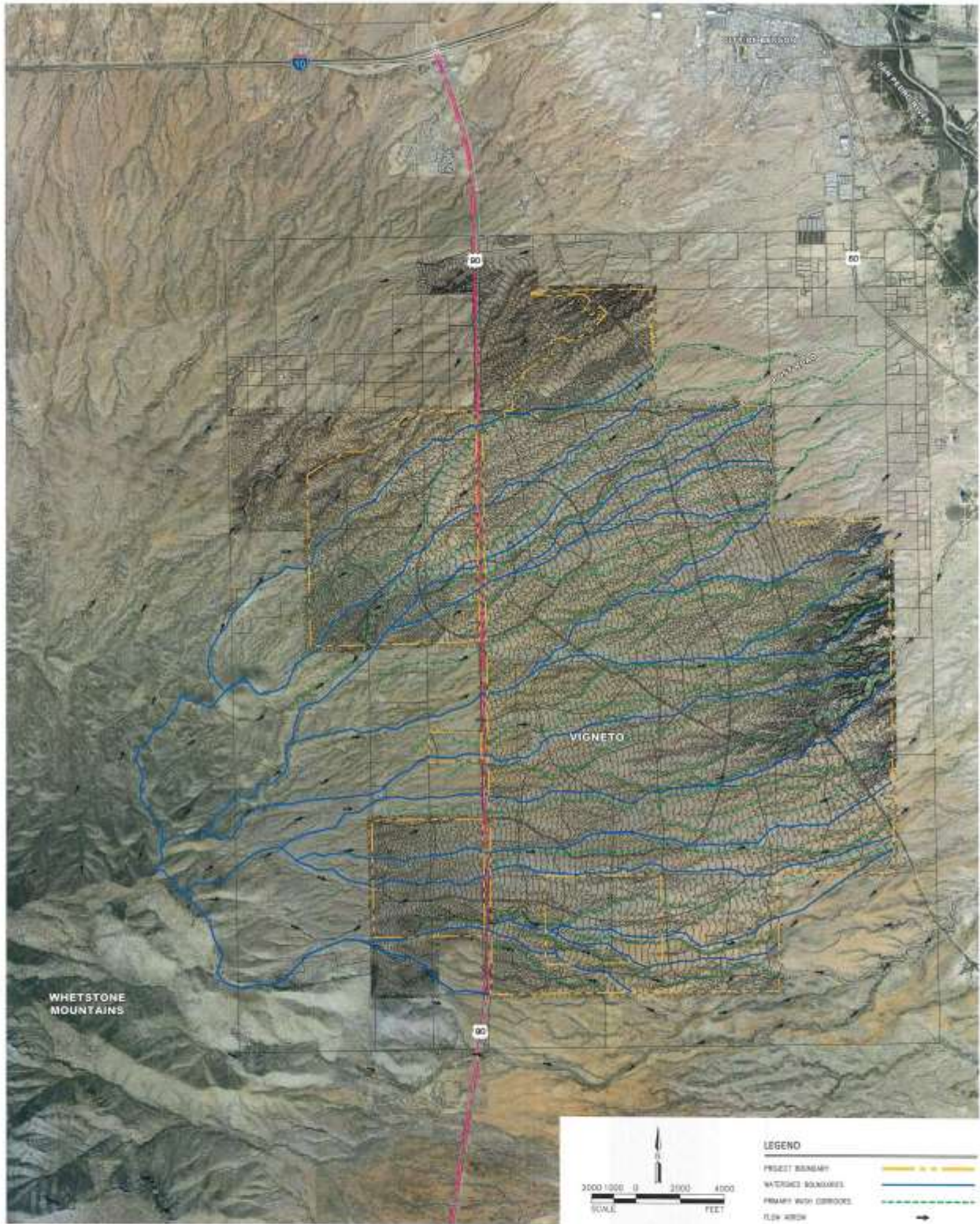
Roadway wash crossings for Vigneto will typically be designed in accordance with the latest version of the PCRFCDC design guidelines or by other City approved design criteria. Culverts, spans and bridge structures used to convey flows in the channels and washes within the Project will be designed to provide appropriate dry access. Inlet and outlet protection will be provided as necessary at culvert, buried arch system or modular precast system, and storm drain discharge points to protect against localized scour.





Illustration 4 - Conceptual Stormwater Crossing





Disclaimer: This exhibit has been prepared for general planning and illustrative purposes only and is not to be relied upon for actual dimensions. The elements shown are diagrammatic and shall not be construed as a final representation of engineering design.



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The Villages at Vigneto

EXHIBIT 7: CONCEPTUAL STORMWATER PLAN

4.A.iii Conceptual Potable Water Master Plan

Introduction - The Conceptual Water Master Plan provides within this CMP is an overview of the conceptual water system design and operation to serve Vigneto. The policies set forth within this section will affect the required water system layout, facility sizing, and reliability of the required infrastructure. The proposed wells, reservoirs, booster stations, and transmission mains are shown on Exhibit 11: Conceptual Potable Water Plan.

Water System overview - This section includes discussion on the water system operational method, water system pressure zones, infrastructure sizing criteria, general facility layouts and locations, and water use projections. Average facility sizing is included for the wells, however sizing will be determined in the Potable Water PUMP for each Planning Unit.

Potable water demands - The Conceptual Potable Water Master Plan evaluates the proposed potable demands using a set of design criteria and a conceptual land use plan for the project (See Section 7.A – Land Use Final Development Plan and Land Use Budget).

Water System Requirements - The overall potable water system layout will use floating storage as the primary method water delivery. The highest zone may be an exception, as an appropriate reservoir location may not be available. The water surface of the reservoir is set at the high water elevation for the zone, which is generally about 100 feet above the highest home in the zone. This allows the homes within the zone boundary to be served directly from the reservoir by gravity and have the system pressure regulated by the reservoir water surface elevation. This method provides a highly reliable and energy efficient system with low pressure fluctuations.

Six distinct 150-foot water system pressure zones have been developed to provide service to Vigneto. The 150-foot zones will cause low areas within each zone to experience pressures that exceed 80 psi; therefore individual pressure reducing valves (“PRV”) will be required for all homes with main pressures greater than 80 psi. The six proposed Vigneto water system pressure zones are shown the table below.

Zone	High Water (ft)	Boundaries (ft)	Static Pressure (psi)
4,100	4,100	3,850-4,000	109-43
4,250	4,250	4,000-4,150	109-43
4,400	4,400	4,150-4,300	109-43
4,550	4,550	4,300-4,450	109-43
4,700	4,700	4,450-4,600	109-43
4,850	4,850	4,600-4,750	109-43

Vigneto Proposed Water System Zone Boundaries - Five floating reservoir sites located throughout the project are proposed to serve the different water zones. The 4250, 4550, and 4700 zones will each be floated by one reservoir site. Two reservoir sites will be used to float the 4400 zone to distribute the flows between the northern and southern areas of the development.



An existing 1.2 million gallon reservoir is already constructed in this zone. Each floating reservoir will be filled by a transfer booster station located in the lower zone. The 4,850 zone will be served by a pressure booster station and the 4,100 zone will be served by a PRV station from the 4,250 zone.

Booster Stations - Eight booster stations are proposed to meet peak day demand (“PDD”) and distribute water to the five floating reservoirs. The booster stations will be located at reservoir sites. Two booster stations out of the eight are pressure stations that serve the 4700 zone. The majority of the booster stations in the system will be transfer booster stations that move water from zone to zone at PDD. Transfer booster stations are not required to provide fire flow or peak hour demand (“PHD”) since it will be provided via gravity from the floating reservoirs. The floating system will continue to operate during power outages using the available water in the reservoirs. The reservoirs will be sized for average day demand (“ADD”) plus fire flow capacity. Backup Electrical power will only be needed at pressure booster stations that directly serve areas without floating storage. During the initial project phases when a floating reservoir is not in place, some booster stations will need to be designed to provide PDD plus fire flow for the zone until a floating reservoir is constructed.

Water Wells - New groundwater wells will be drilled and developed to serve drinking water needs. The preferred location for the new wells is in the northeast portion of Vigneto. However, the final location and spacing of the wells will be determined with the first Planning Unit Plan. In order to meet the build-out capacity, approximately twelve new wells, plus two backup wells, of an average of 800 gallons per minute (“gpm”) each are proposed and anticipated. The final number of wells will be subject to change based on actual buildout demand and capacity of wells. Well No. 1 is an existing 1200 gpm well that will continue to pump into the system as it is currently configured. The remaining wells will be piped to two new water plants. Water Plant No. 2 and No. 3 will serve as central locations for possible future water treatment needs.

Water system Telemetry - All well and water plant sites will be equipped with the required telemetry and controls to turn on wells and booster stations to fill tanks and provide the required demands to the system. Radios will be installed at all sites for them to communicate to a central monitoring station. This central station will be equipped with a desktop computer with Human Machine Interface (“HMI”) software to allow all well sites and water plant sites to be monitored and controlled remotely. The specific HMI software and Supervisory Control and Data Acquisition (“SCADA”) systems will comply with the City of Benson requirements at time of installation.

Water Transmission System - The potable water transmission system will tie together areas within a pressure zone to create a single integrated zone. The transmission and distribution systems will be sized and arranged to minimize friction-generated line losses and provide the required fire flows. Looped water transmission and distribution systems will be implemented for the water main grid system wherever possible. In addition, appropriate valve locations and intervals will be required to isolate small sections of water-main during maintenance and reduce the number of residences out of service. This Conceptual Master Plan provides a preliminary layout of the water mains along major roadways and where looping is required. Water main sizing will be determined in the Potable Water PUMP for each Planning Unit. However, water main



sizing criteria is provided within this Conceptual Master Plan.

Water System Pressures - Pressure extremes in water systems result in a potential for contamination to enter the system. Low pressures may allow polluted fluids to be forced into the system. High pressures may cause ruptures or breaks. Normal working pressure in the distribution system should not be less than 40 pounds per square inch (“psi”). System pressures under PDD conditions should not drop below 35 psi anywhere within the system. The system shall be designed to maintain a minimum pressure of 20 psi at ground level at all points in the distribution system under all conditions of flow. This is generally understood to mean that the minimum residual pressure must be 20 psi for each individual property owner in a fire flow event from any hydrant, during a flow condition of PDD plus fire flow. The Uniform Plumbing Code, latest edition (“UPC”) limits water pressure within the individual property owners’ plumbing to 15 to 80 psi. Individual pressure reducing valves (“PRV”) will be required for all homes with main pressures greater than 80 psi. Boosting or regulating the pressure from the meter to the individual property owner is the responsibility of the individual property owner.

Potable Water Demand Criteria - The potable water system demand criteria for Vigneto are described below in terms of the demand assumptions. The demand criteria for potable water are used to determine the total build-out water demands for Vigneto. Demand and residency estimates are based on typical engineering criteria for similar systems in southern Arizona.

Residency Rates

Residency Rates	Value	Units
Average number of persons per age-targeted dwelling unit	1.8	Persons per housing unit (“pphu”)
Average number of persons per traditional family dwelling unit ¹	2.7	pphu
Number of students per elementary school (K-8)	1000	students
Number of students per high school (9-12)	2400	students

Potable Water Demand Criteria

Potable Demand Criteria	Value	Units
Average daily per capita water usage for age-targeted residential ¹	96	gallons per capita per day (“gpcd”)
Average daily per capita water usage for traditional family residential ¹	103	gpcd
Average daily per acre water usage for Mixed Use/Infrastructure/Civic/Recreation ¹	1400	gallons per acre per day (gpad)
Average daily per student water usage for elementary school (K-8) ²	25	gallons per student per day (“gpsd”)
Average daily per student water usage for high school (9-12) ²	43	gpsd
Delivery Losses ²	10%	



Ratio of Peak Day (PDD) to Average Day (ADD) use for all residential and non-residential use types	1.8	
Ratio of Peak Hour (PHD) to ADD use for all residential and non-residential use types	3.0	

1. These may be revised per future estimates based on actual demand.
2. ADWR Generic Demand Calculator updated December 9, 2010.

Age-targeted and traditional family water usage includes residential irrigation demands for subdivision right of way, small parks, and homeowner’s association facilities. Golf courses, major parks, and other irrigation demands will be served by reclaimed water with the exception of the summer months in the pre-buildout stages of development.

Drilled Well Criteria - The total well capacity for the potable water system will be designed to meet PDD for Vigneto plus the largest well out of service or 10% of PDD as additional reserve capacity, whichever is more stringent.

Well General Site Layout and Elements - The well sites will generally be constructed with the following elements:

- **Site Layout** - Will typically include a 100-ft by 100-ft fenced and secure site.
- **Site Enclosure** - May be chain link fence as temporary fencing prior to development surrounding the site.
- **Pump Type** - Each well will be equipped with a vertical turbine line-shaft pump with welded steel aboveground discharge manifold.
- **Hydropneumatic Tank** - Each site will include a hydropneumatic tank for control as needed and for surge protection. The size of the hydropneumatic tank will be sized for surge and per Tucson Water standards.
- **Electrical Facilities** - Will be rack mounted with a shade structure.
- **Telemetry** - Each site will be controlled via telemetry based on tank level.
- **Sound Enclosures** - For well motors may be used if determined necessary and agreed with developer and City.

Forebay Storage for Future Water Treatment - The water wells will pump into two water plant sites (Water Plant No. 2 and No. 3). Water Plant No. 3 includes a forebay storage reservoir that provides the Project for potential treatment of contaminants such as arsenic or nitrates. The reservoir will serve as the point of compliance for treatment and can be used for blending water or other treatment methods. The reservoir at Water Plant No. 2 is currently a floating reservoir for the 4250 zone. However, a forebay reservoir could be constructed at this site to serve the same purpose as the tank at Water Plant No. 3. Having the wells pump to a reservoir keeps high pressure off of the wells and reduces cycling for the motors.



Storage Reservoir Criteria - Arizona Administrative Code reservoir sizing criteria requires average day demand of the peak month unless the system has multiple wells. The Vigneto potable water system will have multiple wells; therefore, the storage requirement will be reduced to ADD plus fire flow capacity. Fire flow storage will be provided for the largest required fire flow and PHD within the zone (or zones) that the reservoir serves. For zones without floating storage, the fire flow will be supplied from the reservoir and booster station that serves the zone. Reservoirs will be sized for the single largest fire flow of the zone(s) that the reservoir serves.

Reservoir storage capacity will be based on initial development consumption and phased as the potable water system expands with up to two reservoirs allowed per site. Phasing of the reservoirs will help maintain water quality as the storage will more closely match demand and the water will circulate more frequently. If needed, tank mixers can be installed to maintain circulation in the reservoirs on a case by case basis. The storage should be provided in the zone where the usage is required or available to be readily transferred to the zone of use. Individual reservoir capacity is not calculated as part of this Conceptual Master Plan, but will be determined in the Potable Water PUMP for each Planning Unit. The general locations of storage reservoirs and the total build-out storage requirements (excluding fire flow) are presented in this Conceptual Potable Water Master Plan.

Reservoir General Site layouts and Elements - Reservoir sites will typically be constructed with the following elements:

- Reservoir sites to be sized to maintain access to equipment for vehicles that enter the site. Final reservoir site layout and dimensions will be determined during facility design.
- All tanks shall be deemed aboveground steel tanks per AWWA D100 or D103 standards, but may be recessed into the ground with sloped banks so as to reduce the height of tank relative to neighboring land uses.
- The high water level in the tank shall be set to the high water elevation of the zone.
- Reservoirs may be cut into sides of hills or other natural features for aesthetic screening from view.
- Reservoirs shall be 20-feet tall to maintain the same bottom and top elevation for all reservoirs within the same zone.
- Above ground piping within the site shall be welded steel.
- Electrical facilities shall be rack mounted with a shade structure.

Booster Station Criteria - The booster station sizing requirement for zones with floating reservoirs is PDD of the zone it supplies. For booster stations that serve zones without floating storage, the booster stations shall supply the greater of PHD or PDD plus fire flow. During initial project phases when a floating reservoir is not in place, the booster station will need to be designed to provide PHD or PDD plus fire flow to the zone it serves. These pressure booster stations would be converted to transfer booster stations once the floating reservoir is constructed.

Booster Station General Site layouts and Elements - Booster station sites will be constructed



with the following standard or typical elements:

- Booster stations will be located within the reservoir sites.
- Transfer booster stations shall consist of equally sized pumps that will rotate as needed to supply PDD.
- Pressure booster stations will have different sized pumps to supply the wide range of flows from ADD to fire flow.
- Pumps at booster stations that are converted from pressure to transfer stations will be modified to have equal sized pumps.
- Prepackaged booster stations will be allowed for temporary pressure booster stations but not for permanent transfer booster stations.
- Sound enclosures for booster station motors may be used as desired by the developer..
- All above ground manifolds shall be welded steel. Suction and discharge piping shall be sized per Tucson Water standards.
- Booster stations will be equipped with hydropneumatic tanks for pressure control, as needed, and for surge protection. The size of the hydropneumatic tank will be sized for surge and per Tucson Water standards.
- Onsite electrical will be 480 volt and electrical equipment shall be rack mounted with a shade structure.

Distribution System Criteria - The design criteria for the distribution system are used to size and arrange the distribution lines to provide the required flows while meeting the ADEQ requirements to maintain 20 psi under all conditions of flow. Pressures of 20 psi must be maintained throughout the zones under PDD plus fire flow conditions. The following criteria shall be used to size pipelines in conformance with Water Design Standards:

- Under PDD conditions, for distribution system pipelines 12 inches or less, the velocity shall not exceed 5 feet per second (“fps”) or the head loss shall not exceed 10 feet per 1,000 feet, whichever is more stringent.
- Under PDD plus fire flow conditions, for distribution system pipelines 12 inches or less, the velocity shall not exceed 11 fps.
- Under all conditions of flow, for transmission mains 16 inches or larger, the velocity shall not exceed 5 feet per second or the head loss shall not exceed 3 feet per 1,000 feet.

Pipeline sizing - will be designed using a hydraulic model to meet velocity, head loss, and system pressure requirements. A line-size valve, normally closed, or a pressure reducing valve (“PRV”) station shall be installed on pipelines crossing zone boundaries. The Conceptual Potable Water Master Plan shows a PRV station between the 4700 zone and 4550 zone, the 4400 zone and 4250 zone, and the 4250 zone and 4100 zone.

Fire Flow Requirements - The City of Benson Fire Department will serve The Villages at Vigneto. Fire flow requirements will be set based on the City of Benson Fire Department adopted fire code based on actual building sizes and materials to be determined.

ADWR Decision and Order 2008 - The City of Benson is approved for a Designation of Adequate Water Supply of 13,474 acre feet of ground water per year. Of this total, 12,000 acre feet of



water per year has been allocated to the property now called The Villages at Vigneto (Formerly known as Whetstone Ranch). As technological advancements have occurred water demands for residential developments have declined. Water demand in new housing developments have historically adjusted on a declining basis consistently decade after decade. The Designation of Adequate Water Supply for this project was calculated and approved by the ADWR in 2008, and since that time, with technology advancements, and more efficient civil engineering design, and construction technology, the projected total demand for the project has significantly been reduced. Future technology and design efficiencies are expected to continue to reduce the forecasted total demand per household. As a result, the proven water supplies will not be taxed to the levels as previously anticipated. This trend is expected to continue, proving the ground water sources in the aquifers are more than adequate to supply the water demands of the entire project.

Potable Water Demand Projections - A preliminary build-out of the potable water demand has been calculated based on the CMP land use plan (See Section 7.A – Land Use Final Development Plan and Land Use Budget) and potable water demand criteria in this section. Residential potable water demand is calculated based on 75 percent of the maximum 28,000 residential units will be age-targeted and 25 percent will be traditional family homes. The net estimated ground-water demand for the Villages at Vigneto is 5,739 acre feet per year. The preliminary estimate of the ADD is approximately 8,519 acre feet per year (“af/yr”).

Potable Water Demand Projection Table

Use Type	Acreage per Use Type	# Units/ Students	ADD (gpd)	ADD (gpm)	PDD (gpm)	PHD (gpm)
Residential	7,305.2	28,000	5,575,500	3872	6970	11616
Mixed Use	678.3		949,620	659	1186	1977
Infrastructure, Civic, and Recreation	133		185,500	129	232	387
Elementary Schools	100	4000	100,000	69	124	207
High School	50	2400	103,200	72	130	216
Vigneto Subtotal			6,838,820	4,749	8,548	14,247
Lost & Unaccounted for Water (10%)			683,882	475	855	1425
Vigneto Total			7,522,702	5,224	9,403	15,672

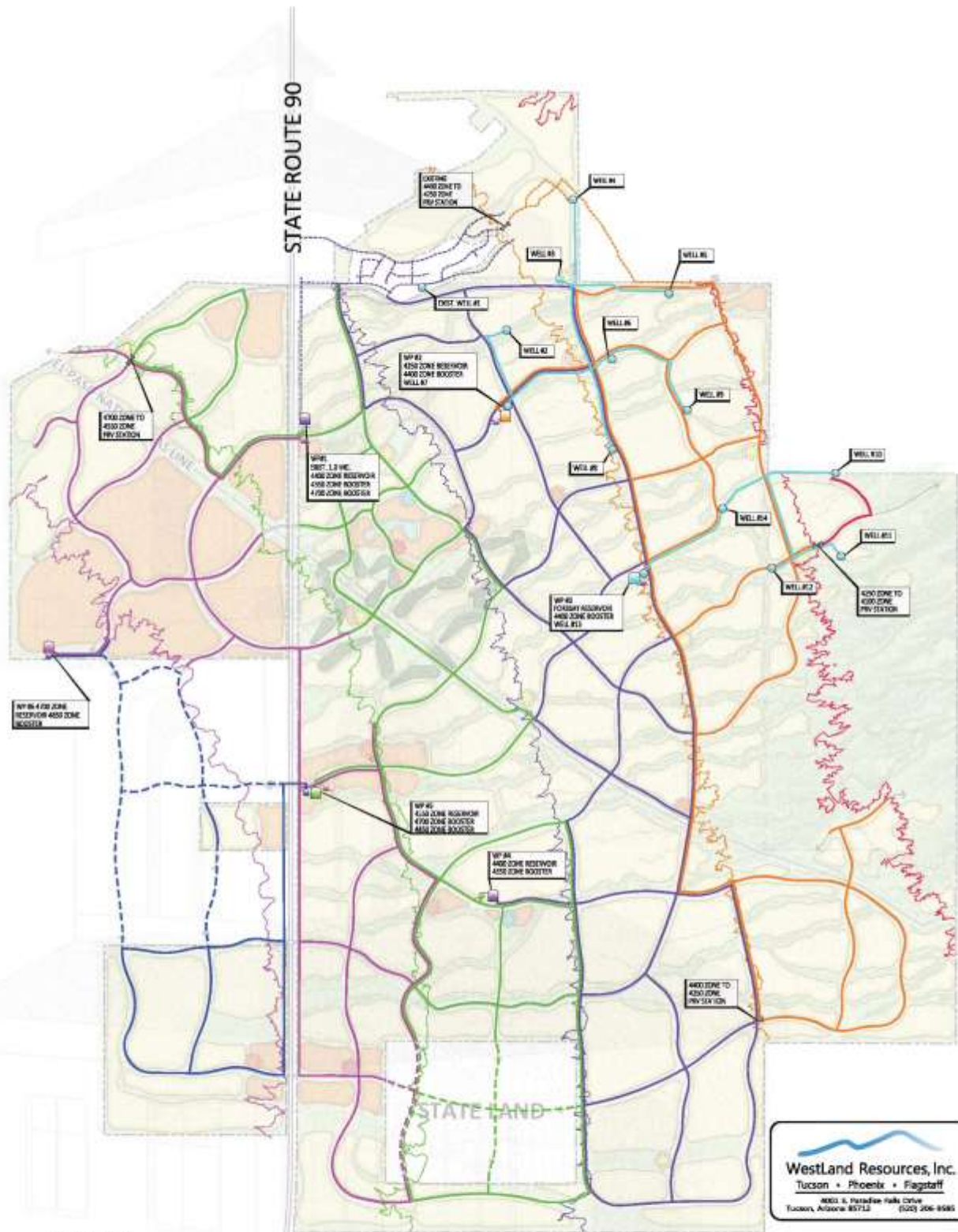


Well Capacity - The total preliminary well capacity for the system is estimated at approximately 9,500 gpm. This is equivalent to twelve (12) wells at an average 800 gpm each. This is a good approximate average for the area based on existing aquifer data, as some wells will produce more and others will produce less. The system requires enough capacity with the greater of either the largest well out of service or 10% reserve capacity. 10% reserve capacity is 950 gpm, which is greater than the largest well of 800 gpm. Therefore, two additional wells are shown for a total of 14 wells for the Conceptual Potable Water Master Plan. Actual number of wells and capacity will vary due to fluctuations in actual available capacity of designed wells are constructed and placed into service.

Booster Station Capacity - The total preliminary booster station capacity is estimated at the PDD of 9,500 gpm. This excludes the fire flow capacity required for pressure booster stations. Each booster station will be sized for the demand of the zone that it serves.

Water Reservoir Storage Capacity - The total preliminary reservoir storage capacity of the system is approximately 7.6 million gallons plus fire flow. Each reservoir will be sized for the ADD plus fire flow of the zone or zones that it serves.





LEGEND

- RESERVOIR
- WELL
- BOOSTER STATION
- ⊕ PRESSURE REFLECTING VALVE
- EXISTING WATER MAIN
- 4200 ZONE WATER MAIN
- 4300 ZONE WATER MAIN
- 4400 ZONE WATER MAIN
- 4500 ZONE WATER MAIN
- 4600 ZONE WATER MAIN
- 4100 ZONE WATER MAIN
- 4300 ZONE WATER MAIN
- RAW WATER MAIN


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The Villages at Vigneto

EXHIBIT 8: CONCEPTUAL POTABLE WATER PLAN

4.A.iv Conceptual Wastewater Master Plan

Introduction - The main purpose of this Conceptual Wastewater Master Plan is to evaluate gravity sewer service for Vigneto, determine general locations of any required lift stations and force mains, and to determine the required capacity of the Wastewater Treatment Plant (“WWTP”). Vigneto is located within the City of Benson wastewater service area. The proposed gravity sewers, lift stations, force mains, and the WWTP are shown on Exhibit 9: Conceptual Wastewater Plan.

This section includes discussion on the wastewater system operational method, infrastructure sizing criteria, general facility locations, and wastewater flow projections. Buildout facility sizing is included for the WWTP, however sizing will be determined in the Wastewater PUMP for each Planning Unit for individual gravity sewer mains, lift stations, or force mains.

The Conceptual Wastewater Master Plan evaluates the wastewater flows using a set of design criteria and a conceptual land use plan (See Section 7.A – Land Use Final Development Plan and Land Use Budget).

Wastewater System Requirements - Vigneto will be served by an existing WWTP located in the northeast portion of the Project. The overall topography across Vigneto slopes from west to east allowing the majority of the flows to gravity to the WWTP. Gravity sewer will be used for a large portion of the Project, with wastewater going directly to the WWTP. Due to topography east of the abandoned railroad corridor, several lift stations will be required to pump wastewater flows uphill to a gravity sewer spine main. Five locations for lift stations are included in the Conceptual Wastewater Master Plan based on the conceptual land use plan.

A preliminary profile of the north-south gravity sewer line located on the east end of Vigneto along the abandoned railroad corridor was evaluated to verify gravity flow and an acceptable depth of the sewer line. The north-south sewer line profile showed that the general location of the sewer will work for gravity service at an acceptable depth. The remaining sewer profiles will need to be evaluated during the Planning Unit process to verify acceptable slopes and depths for gravity sewer service. The alignments shown generally work based on the slope of the existing topography. Sizing of sewer lines will be determined in the Wastewater PUMP for each Planning Unit.

Wastewater Demand Criteria - The wastewater system demand criteria for Vigneto are described below in terms of the demand assumptions per land use. The demand criteria for wastewater are used to determine the total build-out wastewater flows for Vigneto. Flow estimates are based on typical engineering criteria for similar systems in southern Arizona. Residency Rates for Wastewater are the same as those used for the Potable Water System.



Wastewater Flow Design Criteria

Wastewater Demand Criteria	Value	Units
Average daily flow per capita for Age-Targeted and Traditional Family ¹	70	gpcd
Average daily flow for mixed use/infrastructure/civic/recreation ²	1000	gpad
Average daily flow per student for elementary school (K-8) ³	20	gpsd
Average daily flow per student for high school (9-12) ³	28	gpsd
Residential Peaking Factor		Per A.A.C R18-9-E301(D)(1)(b)(i)
Non-Residential Peaking Factor for mixed use/infrastructure/civic/recreation	3	
Wet Weather Infiltration (WWI)	250	gpad

1. Based on average residential flow rate reporting to Continental Ranch Regional Pump Station as of August 2013 per Pima County Regional Wastewater and Reclamation Department.
2. Addendum No. 1 Linda Vista/Twin Peaks Sewer Basin Study (For Cascada/Cascada North and Marana Spectrum Projects) prepared for Red Point Development by Presidio Engineering, Inc. July 7, 2013.
3. Arizona Administrative Code (AAC) R18-9 Table 1. Unit Design Flows.

ADEQ Design Criteria - The current residential wastewater flow accepted by the Arizona Department of Environmental Quality (“ADEQ”) for sewer design is 80 gpcd. Recent data for a large regional pump station in Tucson, Arizona shows that actual flows for a combination of new and old construction is close to 63 gpcd. Flows are continuing to decrease as water efficient fixtures are used in new construction. In an effort to not oversize the Vigneto wastewater facilities due to decreasing flows a wastewater flow of 70 gpcd is proposed for design. An A312G form will need to be submitted to ADEQ for the variance from the currently accepted 80 gpcd during the first years of development. However, over the buildout timeframe it is expected that ADEQ will reduce the acceptable design flow, to possibly less than 70 gpcd, per the current trends.

Gravity Sewer Criteria - The Pima County Regional Wastewater Reclamation Department (“RWRD”) Engineering Design Standards will be used to size the gravity sewer mains. Per the RWRD standards, gravity sewer mains will be sized to convey peak dry weather flow (“PDWF”) with a ratio of the depth of flow in the pipe (“d”) to the diameter (“D”) of the pipe of $0.75 (d/D \leq 0.75)$. Minimum pipe slopes and velocities per diameter pipe shall be per the RWRD standards. In no case shall the full flow velocity be less than two feet per second, assuming a Manning’s roughness coefficient of 0.013.

Lift Station Criteria - Lift Stations shall be designed in accordance with the Arizona Administrative Code (“A.A.C.”) R18-9-E301 and RWRD Engineering Design Standards. Per these standards, lift stations are to be designed with a minimum of two pumps each capable of handling the peak wet weather flow (“PWWF”). These standards set the criteria regarding sizing the wet well, manifold design, pump out ports, odor control, backup power requirements, etc. Electrical facilities for the lift stations shall be rack mounted with a shade structure. The wet well can either be a rectangular or circular configuration as required to fit all required equipment. Prepackaged lift stations will



be allowed for PWWFs up to 300 gpm and can be designed with below ground manifolds. Lift stations greater than 300 gpm shall be constructed with above-ground manifolds. All lift stations will be public facilities.

Force Main Criteria - Force mains shall be designed in accordance with the Arizona Administrative Code (“A.A.C.”) R18-9-E301 and RWRD Engineering Design Standards. Per these standards the velocity in a force main shall be a minimum of 3 fps and maximum of 7 fps. Per RWRD standards, force mains shall be constructed of butt-fused high density polyethylene (“HDPE”).

Wastewater Treatment Plant Criteria - The design flow of a wastewater treatment plant is the average daily flow (“ADF”) per A.A.C. R18-9-B202(9)(a). The existing WWTP is currently capable of treating 250,000 gallons per day. It is a modern enclosed Sequencing Batch Reactor (“SBR”) system with a compact footprint. The WWTP will treat to A+ effluent quality, allowing the effluent to be used for open access irrigation of golf courses, schools, parks, and other irrigation demands.

Aquifer Protection Permit - The City of Benson has an Aquifer Protection Permit (APP) under ADEQ for the existing WWTP facility in its current capacity. Historically, the general practice was to apply for an APP amendment once the flows to the treatment plant were at 80% of the treatment plant capacity. However, this was never a written ADEQ policy. New APP permits require an amendment once the alert level (AL) for average monthly flow established in the permit is exceeded. The alert level is typically around 95% of the treatment plant capacity. This requirement will be written in any amendments to the existing permits for the WWTP within Vigneto.

Section 208 Water Quality Management Plan - The WWTP will be expanded in conformance with the approved SEAGO Section 208 Water Quality Management Plan. The timeframe for facility expansion will take into consideration the permitting requirements, engineering design, construction, and absorption schedule to ensure that flows never exceed plant capacity. As a minimum standard Vigneto will start engineering design and permitting for the WWTP expansion at 80% plant capacity and construction at 90% plant capacity, unless the absorption schedule dictates an earlier start date to ensure plant capacity. Regardless, no building permits will be issued for construction of new housing that exceed the proven actual capacity of the WWTP.

The incremental size of the WWTP phasing will be based on the development absorption schedule and other economic and design factors.

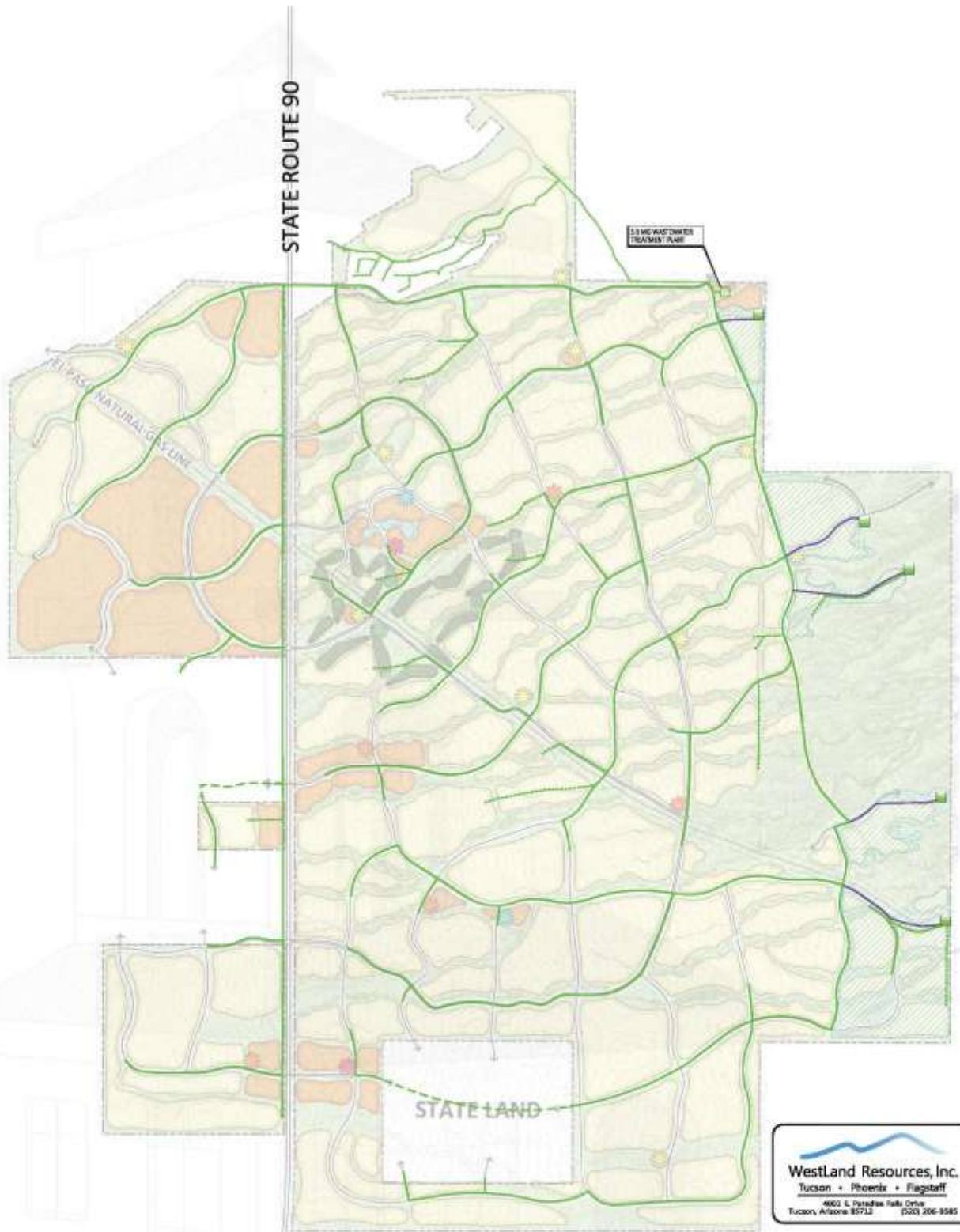
Preliminary Wastewater Flow Projections - Estimated wastewater flows have been calculated based on the land use plan in Section 7. Residential flow is calculated based on the assumption that 75 percent of the maximum 28,000 residential units will be age-targeted and 25 percent will be traditional family homes. The preliminary estimate of the ADF is approximately 4.9 MGD. This is equivalent to approximately 5,520 af/yr. PDWF and WWI will be calculated in the Wastewater PUMP for each Planning Unit as part of the gravity sewer, lift station, and force main sizing. The WWTP at build out will be designed with enough capacity for the ADF of 4.9 MGD.

Wastewater Flow Projections



Use Type	# Units/Acres/Students	ADF (MGD)
Residential	28,000	3.97
Mixed Use	678	0.68
Infrastructure, Civic, and Recreation	133	0.13
Elementary School	4,000	0.08
High School	2,400	0.07
Total ADF		4.93





LEGEND

- LIFT STATION
- GRAVITY SEWER
- GRAVITY FLOW THROUGH SEWER
- PROPOSED OFFSET SEWER
- TRENCH
- EXISTING GRAVITY SEWER
- LIFT STATION OR ALTERNATIVE TREATMENT SERVICE AREA

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The Villages at Vigneto
EXHIBIT 9: CONCEPTUAL WASTEWATER PLAN

4.A.v Conceptual Reclaimed Water Master Plan

Introduction - Vigneto will use the reclaimed water generated by the WWTP for irrigation needs when reclaimed water is available for that purpose. Vigneto has planned golf and other various turf facilities such as parks and schools that will benefit from the reclaimed water. Reclaimed water is also contemplated for use on the vineyards within the development. Reclaimed water infrastructure will consist of pipelines, storage facilities, booster stations, and recharge facilities (See Exhibit 10: Conceptual Reclaimed Water Plan, recharge facilities not shown).

Reclaimed Water Pressure Zones - This section includes discussion on the reclaimed water system operational method, reclaimed water system pressure zones, infrastructure sizing criteria, general facility locations (excluding recharge facilities), reclaimed use and recharge projections, and a preliminary water balance analysis at buildout. Sizing will be determined in the Reclaimed Water PUMP for each Planning Unit for reservoirs, booster stations, water mains, and recharge facilities.

Reclaimed Water Irrigation Demands - The Conceptual Reclaimed Water Master Plan evaluates the proposed reclaimed water irrigation demands using a set of design criteria and a conceptual land use plan for the project.

Reclaimed Water System Requirements - The Vigneto reclaimed water system infrastructure consists of pipelines, storage, booster stations, and recharge facilities. The reclaimed water system consists of two water pressure zones: the 4470 zone and the 4750 zone. Fewer zones are required for the reclaimed system than the potable system because reclaimed systems can operate at much higher pressures than potable systems. The 4470 zone will initially be controlled by pressure with booster pumps located at the WWTPAs build-out occurs a 4470 zone floating reservoir will be built, and the level in the reservoir will control the booster station at the WWTP. The 4750 zone will be served by a pressure booster station drawing suction from the 4470 zone reservoir.

WWTP Booster Station - The booster station at the WWTP will draw from a storage reservoir that will provide reclaimed water to the system. The storage reservoir will provide a consistent supply to the booster station by balancing out the daily fluctuations of reclaimed water generation. The total daily estimated reclaimed water generated from the WWTP is 95% of the treated average daily sewer flow.

Reclaimed Water Storage - Reclaimed water will be pumped from the WWTP to reclaimed water storage facilities including golf course reclaimed water storage lakes and a 4470 zone reclaimed reservoir site. Reclaimed water storage facilities will fill during the day when wastewater generation and treatment occur and drain at night when irrigation cycles take place.

Reclaimed Water Aquifer Recharge - During the winter months when reclaimed water usage is low, excess reclaimed water will be recharged to the aquifer through recharge basins. The general location of the recharge basins will be in the lowest zone and the geographic center of the Project. The specific location, size, and number of recharge basins will be determined in the Reclaimed Water PUMP for each Planning Unit.



Reclaimed water Transmission Lines - Reclaimed water transmission mains will be sized to transport reclaimed water from the treatment plant to the storage facilities and to supply reclaimed water to the various turf facilities and/or recharge basins.

During the beginning stages of development, available reclaimed water will be minimal. Groundwater will be used to supplement the irrigation demands of the reclaimed system during these early stages of development. An air gap or other type of backflow prevention will be required between the groundwater supply and the reclaimed water system.

Reclaimed Water Demand Criteria - The reclaimed water system demand criteria for Vigneto are described below in terms of the demand assumptions. The demand criteria for reclaimed water are used to determine the total build-out reclaimed water demands for Vigneto. The low water usage and turf demand criteria are based on the generic demand calculator generated by the Arizona Department of Water Resources (“ADWR”). The golf course usage is based on the ADWR Third Management Plan for the Tucson Active Management Area (“AMA”). Actual golf course water use may change based on actual turf acreage to be determined during golf course design, but will not exceed the 5 acres of turf limit per hole set by ADWR for AMAs. Vigneto is not located within an AMA.

Reclaimed Water Demand Criteria

Reclaimed Water Demand Criteria	Value	Units
Low Water Vegetation Usage ¹	1.6	afaa
Turf Usage ¹	4.6	afaa
18-Hole Championship Golf Course Irrigation Usage ²	428	af/yr
27-Hole Championship Golf Course Irrigation Usage ²	643	af/yr
18-Hole Executive Golf Course Irrigation Usage ³	190	af/yr

1. ADWR Generic Demand Calculator updated December 9, 2010
2. Championship golf course water use estimate is 4.76 af/yr per acre of turf with 5 acres of turf per hole based on the ADWR Third Management Plan for Tucson Active Management Area 2000-2010. Water use includes all irrigation for turf, low-water use, and lakes.
3. 18-Hole Executive courses size is generally based on courses at The Villages development in Florida. Assumed to only have 2.2 acres of turf per hole with a water use of approximately 4.76 af/yr per acre of turf.

Reclaimed Water Storage Reservoir Criteria - Reservoir storage facility capacity will be determined with the Reclaimed Water PUMP for each Planning Unit.

Reclaimed Water Reservoir General Site layouts and Elements - Reclaimed reservoir sites will generally be constructed with the following elements:

- Sites shall be sized to maintain access to equipment for vehicles that enter the site. Final reservoir site layout and dimensions will be determined during facility design.
- All reservoirs shall be aboveground steel tanks per AWWA D100 or D103 standards.
- The high water level in the reservoir shall be set to the high water elevation of the zone.
- Reservoirs may be cut into sides of hills or other natural features for aesthetic screening from view.
- Reservoirs shall be 24-feet tall unless otherwise agreed by Developer and City Engineer.



Reservoirs may be recessed into the ground.

- Above ground piping within the site shall be welded steel.
- Electrical facilities shall be rack mounted with shade structure.

Reclaimed Water Booster Station Criteria - The booster stations will be sized for peak usage during a specified time interval to be determined by the Reclaimed Water PUMP for each Planning Unit. Booster stations will be located within the reservoir sites. The booster pumps will be sized equally and rotate as needed to supply the design peak demand. All above ground manifolds shall be welded steel. Suction and discharge piping shall be sized per Tucson Water standards.

Reclaimed Water Booster Station General Site Layout and Elements - Reclaimed water booster stations will generally be constructed with the following elements:

- Booster stations will be located at reclaimed water reservoir sites.
- Transfer booster stations shall consist of equally sized pumps that will rotate as needed to supply PDD.
- Pressure booster stations will have different sized pumps to supply the range of flows from ADD to PDD.
- Pumps at booster stations that are converted from pressure to transfer stations will be modified to have equal sized pumps.
- Prepackaged booster stations will be allowed for temporary pressure booster stations but not for permanent transfer booster stations.
- Booster stations will be equipped with hydropneumatic tanks for pressure control, as needed, and for surge protection. The size of the hydropneumatic tank will be sized for surge and per Tucson Water standards.
- Sound enclosures for booster station motors may be used as desired by the developer..
- Onsite electrical will be 480 volt and electrical equipment shall be rack mounted with a shade structure.

Reclaimed Water Distribution System Criteria - The reclaimed water pipelines will be designed in accordance with Tucson Water design standards and A.A.C. R18-9-602 Pipeline Conveyances of Reclaimed Water. Per Tucson Water design standards, all design standards for the potable water system shall apply to the reclaimed water pipeline design unless stated otherwise in Design Standard 8-14.

The following criteria apply to reclaimed water pipelines in conformance with Tucson Water Design Standards:

- Under PDD conditions, for distribution system pipelines 12 inches or less, the velocity shall not exceed 5 feet fps or the head loss shall not exceed 10 feet per 1,000 feet, whichever is more stringent.
- Under all conditions of flow, for transmission mains 16 inches or larger, the velocity shall



not exceed 5 feet per second or the head loss shall not exceed 3 feet per 1,000 feet.

Pipeline sizing will be designed using a hydraulic model to meet velocity, head loss, and system pressure requirements.

Preliminary Reclaimed Water Demand Projections - Buildout preliminary reclaimed water demand has been calculated based on the land use plan in Section 7. The demand calculations assume one 18-hole championship golf course and three 18-hole executive golf courses will be constructed within Vigneto at build-out. It is also assumed that approximately 180 acres of the open space acreage will be utilized for vineyards that will required reclaimed water irrigation. Preliminary reclaimed water estimates are not broken out into low water use and turf acreage. All irrigation acreage is conservatively assumed to be turf at this time. The preliminary estimate of the average annual reclaimed water demand is approximately 2,470 af/yr. This estimate has been calculated for general demonstration of project size and is subject to change based on actual constructed facilities.

Preliminary Reclaimed Water Demand Projections

Facility	Total Acreage	Percent Turf ¹	Turf Acres	Turf Demand af/yr
Golf Courses		N/A	210	1000
Recreation/Amenity Centers	57	40%	23	105
Major Parks & Effluent Lakes	109	50%	55	251
Minor Parks, Pocket Parks, & Amphitheater	79	10%	8	36
Right-of-Way	726	15%	109	501
Vineyards ²	180	44%	79	364
Elementary School	100	30%	30	138
High School	50	30%	15	69
Total			528	2464

¹. Percentages generally taken from Mission Peaks 4000 Reclaimed Water Master Plan, WestLand Resources July 2006

². Vineyard water usage is assumed to be 2 afaa. This is 44% of the turf water demand of 4.6 afaa. Vineyard irrigation estimate is based on The University of Arizona College of Agriculture 1999 Wine Grape Research Report and an assumed 1,800 plants per acre.

Preliminary Water Balance Analysis - Based on the preliminary wastewater flow and reclaimed water demand projections the average annual volume of reclaimed water available for recharge is **approximately 2,780 af/yr**. The recharge volume is calculated by the difference between the available reclaimed water and the reclaimed water demands. The available reclaimed water is 95% of the 5,520 af/yr of approximate wastewater flows treated at the WWTP, which is calculated to be approximately 5,250 af/yr. The reclaimed water demand is estimated at approximately 2,470 af/yr. The difference between 5,250 af/yr and 2,780 af/yr yields the average annual recharge volume of 2,710 af/yr. However, reclaimed water demand fluctuates on an annual basis, increasing during the summer months and decreasing in the winter months. A



preliminary water balance was created to determine recharge and storage needs during winter months and whether groundwater would be needed to supplement the reclaimed water demands during the summer months. Reference evaporation rates for the Benson area were used to determine the annual irrigation evaporation rates, which provided a method for determining the monthly reclaimed water demand, see table below.

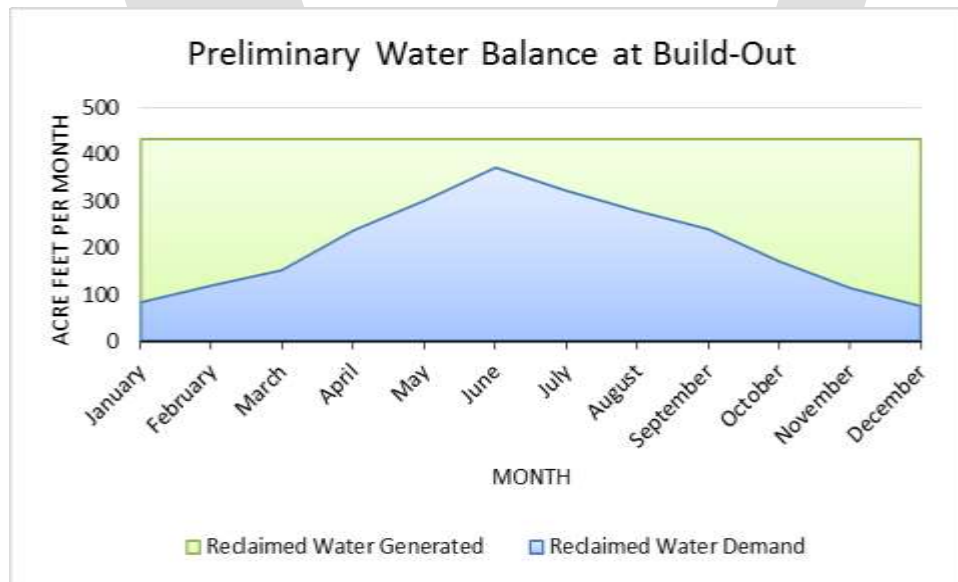
Monthly Reclaimed Water Demand Projections

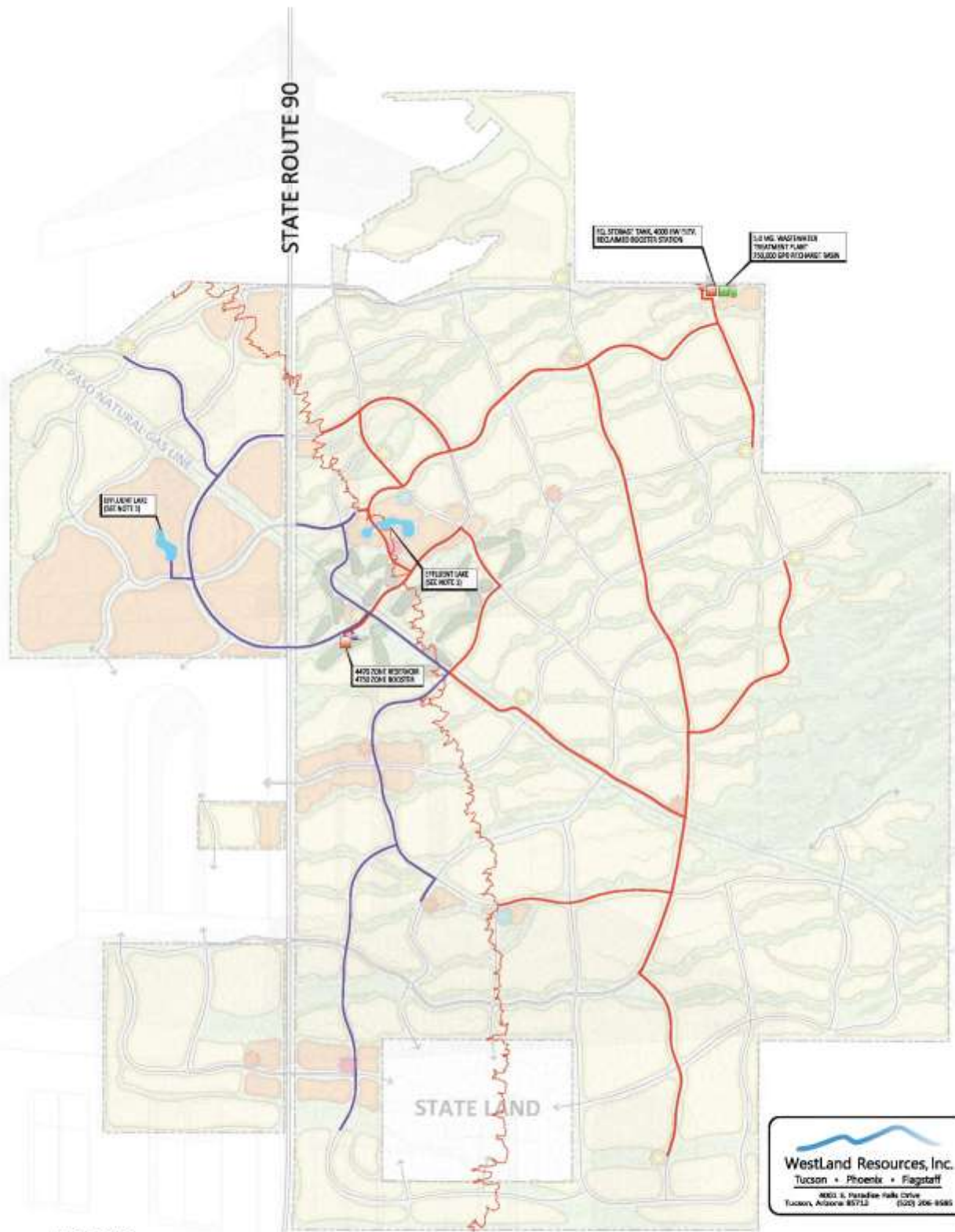
Month	Evaporation Rate¹ (inches/month)	Percent of Total Annual Evaporation	Reclaimed Demand Per Month (af/month)
January	2.2	3%	83
February	3.2	5%	118
March	4.1	6%	153
April	6.4	10%	236
May	8.1	12%	301
June	10.0	15%	371
July	8.7	13%	323
August	7.6	11%	280
September	6.5	10%	240
October	4.6	7%	170
November	3.1	5%	114
December	2.0	3%	74

1. Technical Bulletin 266, Reference Evapotranspiration Estimates for Arizona, prepared by the University of Arizona College of Agriculture.



Reclaimed Water Demand Graph - The total annual reclaimed water demand of 2,470 af/yr was multiplied by the monthly percent of total evaporation to yield an approximate monthly reclaimed water demand in acre feet per month (“af/month”). This is plotted on the figure below. The annual reclaimed water generated of 5,250 af/yr was equally divided by twelve to yield an average monthly amount of reclaimed water available of approximately 437 af/month. The preliminary water balance graph shows that reclaimed water generated exceeds the reclaimed water demands at build out throughout the year. The available volume for recharge is estimated at approximately 354 af in January and 66 af in June. This is subject to change based on land use, the number of golf courses, and other irrigation demands that will use reclaimed water.





LEGEND

- 4470 ZONE RECHARGED WATER MAIN
- 4710 ZONE RECHARGED WATER MAIN
- PROPOSED EFFLUENT LINE

NOTE 1:
EFFLUENT LINES MAY BE RELOCATED THROUGHOUT THE PROPERTY OR DISTRIBUTION TO REUSE OR RECHARGE FACILITIES. ADDITIONAL OPTIONS FOR EFFLUENT RECHARGE OR RECHARGE WILL BE PROVIDED AS DEVELOPMENT PROGRESSES.

Disclaimer: This exhibit has been prepared for general planning and illustrative purposes only and is not to be relied upon for actual dimensions. The elements shown are diagrammatic and shall not be construed as a final representation of engineering design.

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The Villages at Vigneto
EXHIBIT 10: CONCEPTUAL RECLAIMED WATER PLAN

4.A.vi Conceptual Traffic and Roadways Master Plan

Mobility, Access and Connectivity - The lifestyle of the residents within Vigneto depends largely on the degree of mobility/access that the roadways, multi-purpose pathways, and sidewalks provide. Transportation infrastructure within this Project will provide connectivity to regional roadways, address traffic control needs, and create well-coordinated circulation throughout the development. This section outlines the transportation network and illustrates the backbone circulation and connectivity within the Project. (Reference Illustration 5)



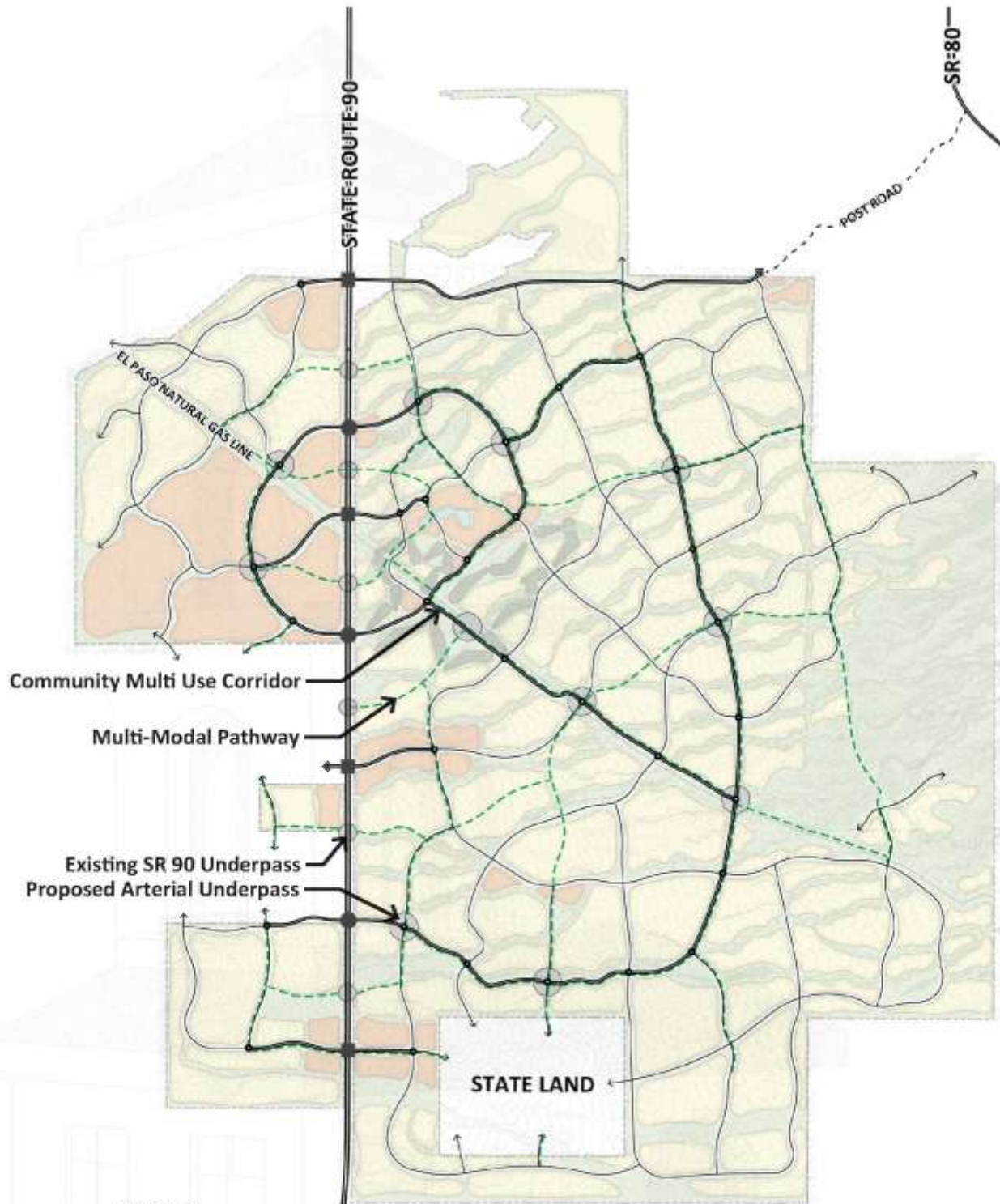
Illustration 5 – Community roadway design

SR-90 is currently a four-lane divided roadway with a wide landscaped median. SR-90 provides north-south access between Interstate-10, Fort Huachuca, and the City of Sierra Vista.

Ingress and Egress from State Route 90 - Access to and from Vigneto will be provided by seven full access intersections along SR-90. (See Exhibit 11: Conceptual Traffic Circulation Plan) These access points are located at or near the existing median breaks and, as set forth in the Master Transportation Plan, and will be alternating between signalized controlled intersections, and round-a-bouts. (See Appendix G: Master Transportation Plan)

Post Road Re-alignment within Property Limits - The Developer proposes to realign Post Road from its current location near the northern boundary of the property. Post Road will be improved to a 4 lane arterial from SR-90 to the eastern boundary of the development. The relocation will allow a viable tie into the existing Post Road location at the north eastern corner of the Project near the WWTP. These improvements to Post Road allow for future connectivity to SR-80 and downtown Benson, promote integration between the downtown area along SR-80 and new developments on SR-90, and reduce local trip traffic on Interstate 10.





Community Multi Use Corridor


Multi-Modal Pathway

Existing SR 90 Underpass

Proposed Arterial Underpass

STATE LAND

LEGEND

-  Project Arterial - Min. 4 Lane
-  Project Collector - Min. 2 Lane
-  Round-a-bout
-  Future Connection
-  Future State Route 90 Intersection - Signalized
-  Future State Route 90 Intersection - Round-a-bout

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The Villages at Vigneto

EXHIBIT 11: CONCEPTUAL TRAFFIC CIRCULATION PLAN

Arterial, Collector, and Local Roadways - A traditional network of project arterial, collector, and local roadways will provide internal circulation within the Project. The arterial roadways will facilitate the major movement of vehicles within the Project, leaving collector roadways to provide direct access to parcel specific developments and move traffic from arterial roadways to local streets. The Project's local streets will provide access to residences and may be gated for some neighborhoods. For planning purposes, a macroscopic transportation model has been developed for Vigneto and included in Appendix D, incorporating land uses to generate and forecast traffic volumes on the arterial and collector roadways. This will assist in developing roadway cross-sections and transportation plans for each region that adequately addresses the expected needs of the Project.

Controlled Access - Allows for public use and does not restrict access to any public right-of-way. Controlled access is allowed on local and collector streets. Controlled access points do not cause any streets to be considered a private street. Controlled access is facilitated by a mechanical arm (or similar device) that allows residents to enter with an electronic device. Visitors may enter by pressing a control button that opens a mechanical arm and triggers a camera to take a photographic image of their license plates.

Multi-Modal Pathways - Vigneto embraces a unique planning concept in terms of traffic and mobility. This method of planning as described has been successfully implemented by large scale developments, and Cities and Towns throughout the nation, including but not limited to; Florida, Carolina's, Texas, Georgia, Minnesota, Washington, California, and Nevada. A network of multi-modal pathways will be developed from the onset and be incorporated into the traditional network of trails, pathways, and roadways. These multi-modal pathways will be constructed to link residences to trip generators such as the parks, golf course, the Town Center, and recreation areas. The multi-modal pathways will support short duration trips through the use of Low Speed Vehicles, bicycles, and pedestrian travel. By its design and nature, the multi-modal pathways are expected to reduce automobile trips within Vigneto by approximately 27%. As a comparison trips generated in similar projects that this concept is modeled after have proven that 55 out of 200 total trips (on average) generated per household are attributed to Low Speed Vehicles, which utilize the multi-modal pathways. (See Section 4.J.xvi – Path and Trail System Design Standards).

Similar to traditional automobile transportation networks, Vigneto's multi-modal pathways will be designed and grouped into classes according to the character of mobility they are intended to provide. Along the arterial roadways, the multi-modal pathways will be separated by a landscape buffer and designed at a minimum 16-foot width. For collector roadways, the multi-use lanes are within the paved area and are separated by a white stripe similar to a bike lane. On Collectors, these lanes will be called Multi-Purpose Lanes. Local roadways will not have multi-modal pathways.

Arterial Round-a-Bouts - In concept, most Vigneto arterial/arterial and arterial/collector intersections will feature round-a-bouts. The round-a-bouts will be designed to accommodate the multi-modal pathway network and the individual multi-modal pathways will cross arterial roadways at a safe distance away from the roundabouts. The transportation plans for each Planning Unit Plan will include concise exhibits on the integration of the multi-modal pathways

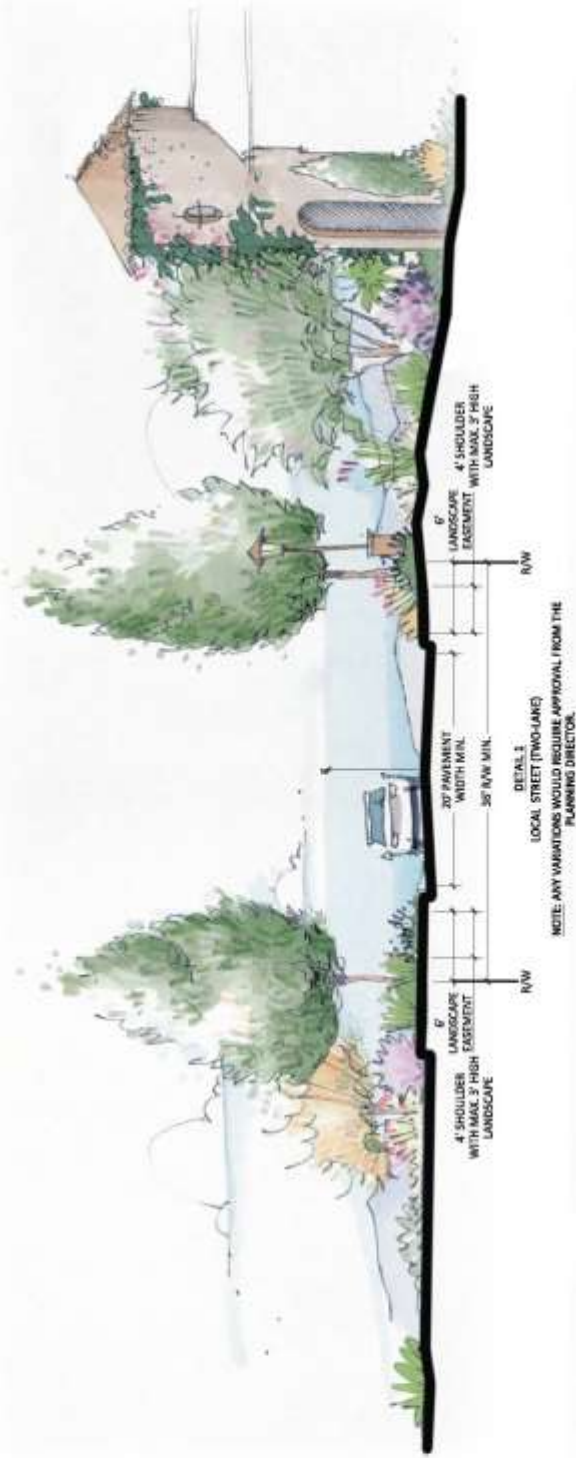


with the traditional roadway network.

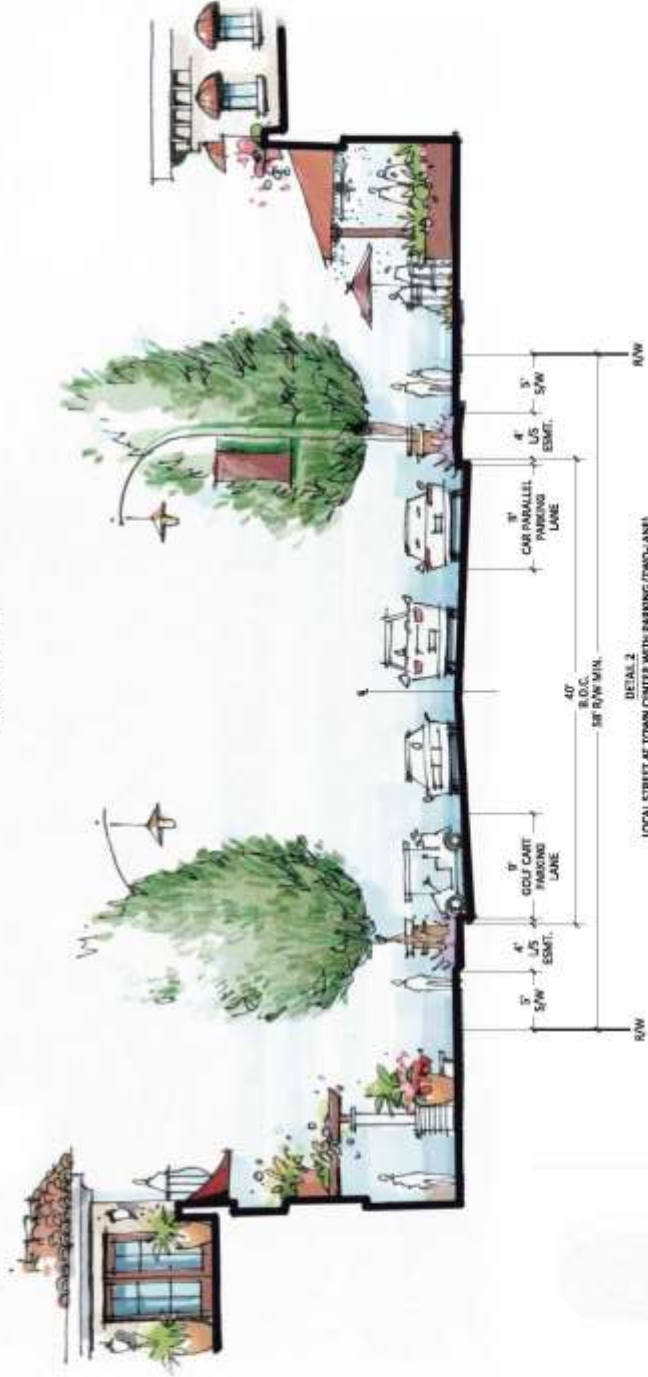
Circulation Plan - The Circulation Plan is a concept plan of the roadway network within Vigneto that shows interconnectivity with SR-90. Final locations for arterial and collector roadways will be shown in the transportation planning and Traffic Impact Analysis of each Planning Unit. Shifts in roadway alignments from this conceptual Circulation Plan do not constitute an amendment to the Final CMP. The system design is balanced and organized to accommodate the land uses, giving residents and visitors the ability to move freely through Vigneto. Emphasizing the multi-modal pathways over the automobile roadways will encourage greater neighborhood interaction and a more attractive environment for all residents.

Roadway Cross-Sections - The roadway cross-sections in Exhibits 12A and 12B show the Village at Vigneto's arterial roadways as divided two lane arterials with selected full access points at predetermined and calculated locations. This will be determined in the design of each Multi-modal pathways along arterial corridors will be separated by a 15-foot landscaped buffer. Collector roadways within the Project will consist of two 16-foot travel lanes and two 7-foot multi-use lanes are within the paved area of the roadway. Local roadways will be designed as 20-foot pavement sections with landscaping.



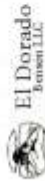


NOTE: ANY VARIATIONS WOULD REQUIRE APPROVAL FROM THE PLANNING DIRECTOR.



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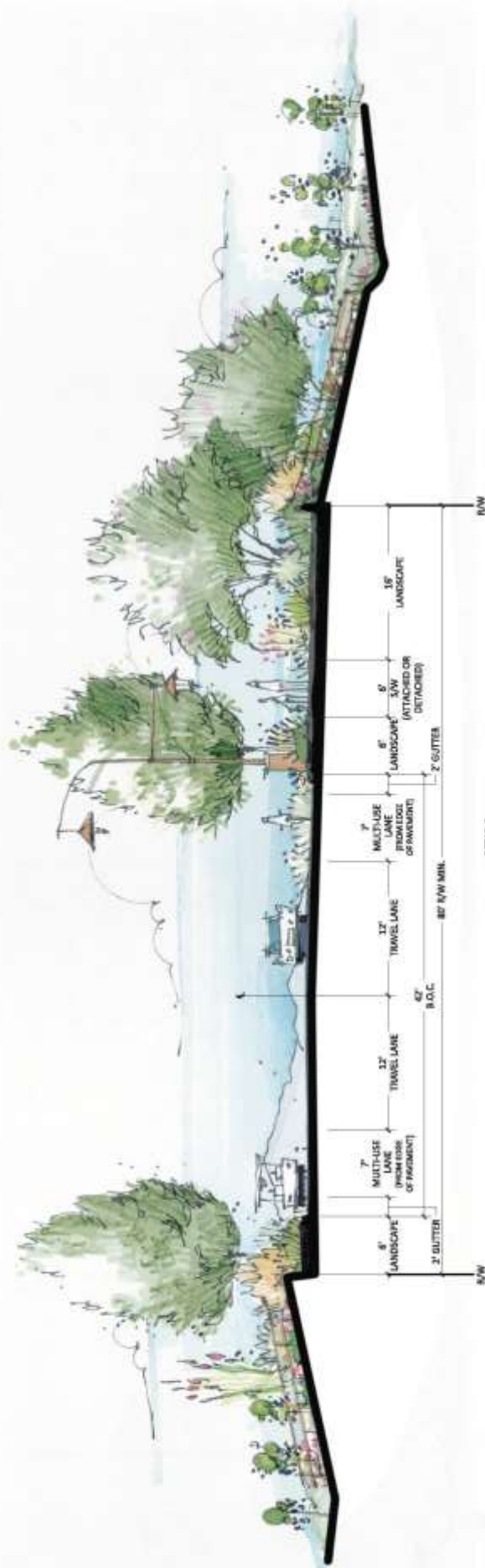
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The Villages at Vigneto

EXHIBIT 12A: ROADWAY CROSS-SECTIONS

September 8, 2015



DETAIL 3
COLLECTION STREET (TWO LANE)
NOTE: ANY VARIATIONS WOULD REQUIRE APPROVAL FROM THE PLANNING DIRECTOR.



DETAIL 4
ARTERIAL STREET (FOUR-LANE)
NOTE: ANY VARIATIONS WOULD REQUIRE APPROVAL FROM THE PLANNING DIRECTOR.

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The Villages at Vigneto

EXHIBIT 12B: ROADWAY CROSS-SECTIONS

September 8, 2015



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4.A.ix Sewer Treatment Plant

Treatment of sewer for the Project will occur at the Waste Water Treatment Plant (“WWTP”) also known as “Whetstone Ranch Water Reclamation Facility”. A Conceptual Design and Phasing Study, prepared by PercWater, was completed in February 2004. A Copy of this approved plan (209 pages) will be provided upon request. The first phase of the WWTP was constructed with a capacity of 250,000 gallons per day (“gpd”). The WWTP will be expanded in conformance with the approved SEAGO Section 208 Water Quality Management Plan. A Copy of this approved plan (176 pages) will be provided upon request.

4.A.x Water Conservation Master Planning

El Dorado is fully aware of the natural habitat and recognizes it must be aware of the beauty and conservation needs of the region’s most sensitive resource, water. With this in mind, the Developer is committed to maximizing water savings within the Development and surrounding area and will employ conservation measures throughout the Project, beginning with water conservation measures at each individual home and commercial parcel all the way to smart watering of the major infrastructure. The following are water conservation measures encouraged within Vigneto.

Residential:

- Deliver a combination of xeriscape landscaping and low-water use vegetation based on the ADWR Regulatory Plant Lists. Encourage artificial turf where appropriate.
- Educate residents concerning landscape watering in early mornings and evenings.
- Educate residents about irrigation systems with seasonal adjustment timers and rain sensors.
- Develop a guideline for low-flow plumbing fixtures, for example:
 - Dual flush toilets
 - Sink aerators
 - Low flow shower heads
- Request homebuilders to provide homebuyers with information on available water saving appliances. Model homes to be built with low water use fixtures and water saving appliances.
- Discourage individual pools and provide neighborhood pools.

Commercial/Multi-Use/Common Areas:

- Provide a combination of xeriscape landscaping and low-water use vegetation based on the ADWR Regulatory Plant Lists. Encourage use of artificial turf.
- Implement smart irrigation controls for parks, schools, golf courses, and common areas. Smart irrigation controls include soil moisture sensors, seasonal adjustment timers, rain and wind sensors, web interface to local weather information, or on-site weather stations.
- Where future technology establish advanced control systems, and include “the internet



of things,” Vigneto will adopt these technologies if practical.

- Require low flow plumbing fixtures, for example:
 - Dual flush toilets
 - Sink aerators
 - Low flow shower heads
- Use waterless urinals where appropriate
- Discourage misters
- Establish reasonable limited amounts of aesthetic water features or accents for commercial and common area property reserved for locations such as major entry locations, and primary focal points throughout Vigneto. Water features will require water recycling.
- Use reclaimed water in public and common areas where consolidated uses of reclaimed water may be used practically and reasonably such as medians, major parks, or agricultural uses.
- Use the best available technologies for water recycling at commercial car washes.
- Install liners in effluent lakes.
- Work with golf course architect to manage and reduce golf course irrigation needs by efficient placement of turf and vegetation.

Water Conservation Strategies - Water conservation measures are encouraged as guidelines to reduce water usage:

- Consider the implementation of a comprehensive water audit program to maximize water conservation potential around homes and commercial facilities including leak detection, replacement of plumbing fixtures, and assessment of landscaping.
- Work with the City of Benson Public Works department regarding the development of a water system leak detection program to detect water losses due to leaks, unauthorized uses of water, maintenance requirements, flushing frequency, and fire hydrant tampering.
- Establish continual communication with City of Benson Public Works department to review water conservation opportunities that can benefit the region beyond Vigneto, and include the City’s planning area.
- Encourage looping of existing water mains to reduce water used do to system flushing.
- Together with the City of Benson Public works department, establish reasonable goals of water system losses.
- Encourage the implementation of a meter repair and replacement program
- Suggest the creation of a monitoring program to notify customers when water use seems to be abnormally high and provide information that could benefit those customers and promote water conservation.
- Assist customers in resolving their high water-use inquiries and complaints.
- Work with City staff to establish a tiered rate structure to encourage customers to use less water in a reasonable way.
- Encourage the recharge of effluent for the region’s wastewater treatment plants to replenish the aquifer.



4.B Infrastructure Design Standards

The land development standards listed in this section will apply to the Final CMP. Self-certification programs have been adopted throughout the country including many Arizona cities. In the event that City of Benson or City Engineer approves a self-certification program, the following standards will still apply to the Designated Professional, Architect Landscape, Architect, or Professional Engineer, all of which shall be registered in the State of Arizona.

Civil Engineering plans - Construction Improvement plans prepared by the Civil Engineer will be submitted to the City Engineer for review and approval. The Construction Improvement plans will meet the requirements of the PUMP's for each discipline of civil engineering.

4.B.i Potable Water Infrastructure Design Standards

Vigneto will include a potable water system that will use wells, booster stations, transmission mains, pressure reducing valve ("PRV") stations, and reservoirs to meet the water demands throughout the Project. This section provides design standards, specifications, and details for the design and construction of the potable water infrastructure that will be owned, operated, and maintained by the City of Benson.

Standards - The following standards will be adopted as the Potable Water Infrastructure Design Standards for the design and construction of wells, booster stations, transmission mains, PRV stations, and reservoirs throughout Vigneto. The design engineer may use additional standards if approved by the City Engineer. All materials listed in these standards will be available for use within Vigneto. Where specific criteria are not identified herein, the latest version of the following design criteria, standards, and specifications shall apply: The Tucson Water Design Standards Manual:

- 8-06: Water Facility Minimum Sizing and Reliability Standards
- 8-08: Water Pipeline Design Standards
- 8-09: Water System Modification Design Standards
- 8-10: Water Plant Design Standards
- 8-11: Water Corrosion Control Design Standards



The Tucson Water Standard Specifications and Details Manual. The Pima Association of Governments (“PAG”) Standard Specifications and Details. The table below provides modifications to the Tucson Water Design Standards Manual that will apply to the Project.

Vigneto – Potable Water Infrastructure Design Standards	
*For Subdivision Utility Standards see section 4.J.9 POTABLE WATER UTILITIES DESIGN STANDARDS	
Design Criteria	Description
Static Pressures (Zones)	The water system within Vigneto is made up of 150-foot pressure zones. Water is to be provided at the water service connection within a static pressure range of 40 pounds per square inch (“psi”) to 109 psi.
Water Storage Facility Capacity	1.0 Average Day Demand plus Fire Flow
Water Storage Tank Materials	Aboveground Storage construction shall be welded or bolted steel per AWWA D100 and D103 Standards
Well Capacity	Peak Day Demand with either largest well out of service or 10% reserve capacity, whichever is greater
Booster Station Capacity	Transfer Booster Stations: Peak Day Demand Pressure Booster Stations: The greater of Peak Day Demand plus Fire Flow or Peak Hour Demand
Transmission Main Grade Breaks and Deflection	DIP Pipe joint deflections shall not exceed one-half of the maximum joint deflection recommended by the pipe manufacturer.
Booster Station Pumps	Permanent booster station pumps will be per Tucson Water standards. UL508 listed and approved/accepted prepackaged booster pump units will be allowed for phasing of temporary booster stations. Phasing will be laid out in the Potable Water PUMP for each Planning Unit
SCADA & Communications	Shall comply with City of Benson requirements.
Pump Motors	Gas engine driven pumps will not be allowed



4.B.ii Wastewater Infrastructure Design Standards

As stated in the “Conceptual Wastewater Master Plan” section, Vigneto will have a wastewater system consisting of gravity sewer mains, lift stations, and force mains to convey wastewater flows to a wastewater treatment plant located in the northeastern portion of the property. This section provides design standards, specifications, and details for the design and construction of the wastewater infrastructure that will be owned, operated, and maintained by the City of Benson.

Standards - The following standards will be adopted as the Wastewater Infrastructure Design Standards for the design and construction of gravity sewer transmission mains, force mains, and lift stations. The design engineer may use additional standards if approved by the City Engineer. All materials listed in these standards will be available for use within Vigneto.

Where specific criteria are not identified herein, the latest version of the following design criteria standards, and specifications shall apply;

The Pima County Regional Wastewater Reclamation Department (“RWRD”) Standard Specifications for Construction, The RWRD Engineering Design Standards, and The Pima Association of Governments (“PAG”) Standard Specifications and Details. All materials listed in these standards will be available for use within Vigneto, The table below provides modifications to the above listed standards that will be adopted by Vigneto.

Vigneto –Wastewater Infrastructure Design Standards	
*For Subdivision Utility Standards see section 4.J.10 WASTEWATER UTILITIES DESIGN STANDARDS	
Design Criteria	Description
Prepackaged lift stations	UL 508 listed and approved/accepted prepackaged lift stations will be accepted for private and public lift stations with Peak Wet Weather Flows (“PWWF”) up to 300 gpm. Lift stations with larger PWWF will be designed per the RWRD Engineering Design Standards.
Manhole Covers	Modified to read “City of Benson Sanitary Sewer”
SCADA & Communications	Shall comply with City of Benson requirements.



4.B.iii Reclaimed Water Infrastructure Design Standards

Vigneto will include a reclaimed water system that will use booster stations, transmission mains, pressure reducing valve (“PRV”) stations, and reservoirs to meet the reclaimed water demands throughout the Project. This section provides the design standards, specifications, and details for the design and construction of the reclaimed water infrastructure that will be owned, operated, and maintained by the City of Benson.

The following standards will be adopted as the Reclaimed Water Infrastructure Design Standards for the design and construction of booster stations, transmission mains, PRV stations, and reservoirs. The design engineer may use additional standards if approved by the City Engineer. All materials listed in these standards will be available for use within Vigneto. Where specific criteria are not identified herein, the latest version of the following design criteria, standards, and specifications shall apply;

- Section 8-14 (Reclaimed Water System Design Standards) of the Tucson Water Design Standards Manual.

The Tucson Water Standard Specifications and Details Manual, and the Pima Association of Governments (“PAG”) Standard Specifications and Details. The table below provides modifications to the above listed standards that will be adopted by Vigneto. All transmission main and PRV station design standards within the Potable Water Infrastructure Design Standards section shall apply to the Reclaimed Water Infrastructure Design Standards.

Vigneto – Reclaimed Water Infrastructure Design Standards	
*For Subdivision Utility Standards see section 4.J.11 RECLAIMED WATER UTILITIES DESIGN STANDARDS	
Design Criteria	Description
Water Storage Facility Capacity	To be determined by Reclaimed Water PUMP for each Planning Unit.
Water Storage Tank Materials	Aboveground storage construction shall be welded or bolted steel per AWWA D100 and D103 Standards.
Booster Station Capacity	Peak usage for specified time interval to be determined by Reclaimed Water PUMP for each Planning Unit.
Booster Station Pumps	UL508 listed and approved packaged booster pump units will be allowed for phasing of booster stations. Phasing will be laid out in the Reclaimed Water PUMP for each Planning Unit.
SCADA & Communications	Shall comply and be compatible with City of Benson requirements. These standards are not published for security purposes.



The infrastructure will be sized based on the following reclaimed water demand criteria. The demand criteria is included in this Final CMP, but will also be available in the Reclaimed Water Planning Unit Plans document:

Reclaimed Water Demand Criteria	Value	Units
Low Water Vegetation Usage	1.6	acre feet per acre per year
Turf Usage	4.6	acre feet per acre per year
18-Hole Championship Golf Course Irrigation Usage	428*	acre feet per year (“af/yr”)
27-Hole Championship Golf Course Irrigation Usage	643*	af/yr
18-Hole Executive Golf Course Irrigation Usage	190*	af/yr
Peaking Factors	TBD by Reclaimed Water Planning Unit Plan document	N/A

* Or as determined by an engineering study to be prepared at time of golf course design based on actual turf acreage. Turf acreage within a golf course is subject to current rules from ADWR for Designation of Adequate Water Supply and not subject to rules established for Active Management Areas (“AMA”).

4.B.iv Roadway Infrastructure Design Standards

In the “Conceptual Traffic and Roadways Master Plan” section, Vigneto is a master plan that will utilize a network of roadways to convey traffic throughout the project. This section provides policy and standards establishing design criteria for constructing and modifying streets, which will be owned, operated, and maintained by the City of Benson. It provides guidance on street classifications, design criteria, intersection design, and street geometry.

SR-90 - Provides regional connectivity and access to the Project. It is owned and operated by ADOT and the Federal Highway Administration (“FHA”). Access is restricted to the access points created by ADOT along SR-90.

Arterial Streets - Provide connectivity and traffic movement and deliver traffic from collector roads to SR-90 or other arterials at the highest level of service possible. Access is limited to facilitate traffic movement. Opposing traffic flows will be physically separated by a raised median. Arterials will utilize round-a-bouts when intersecting other arterial or collector roads to facilitate traffic flow. A multi-modal pathway will be placed on one side of the right-of-way to provide multi-modal access for LSVs, bicycles, and pedestrians. (See Section 4.J.vxi – Path and Trail System Design Standards).



Collector Streets - Provide for traffic movement between arterial streets and local streets. The collector streets will not have raised medians but will include 7-foot wide multi-use lanes on both sides of the street for carts and bicycles. There will be no driveway access to residences directly off of the collectors and driveway access to commercial areas will be limited.

Town Center Local Streets - Are used in the Town Center and provide one lane of traffic each way as well as parking on both sides. Town Center local streets may be designated as one way. They are designed to move traffic at a slow and safe speed and allow for access to the Town Center and its amenities.

Local Streets - Provide access to abutting land uses, provide access to the collector street system and accommodate low traffic volumes. They are designed to discourage high travel speeds and are not intended for through traffic.

Additional Street Cross Sections - May be introduced throughout the life of Vigneto as approved by the City Engineer.

Pima County Subdivision and Additional Development Street Standards – Where specific criteria are not identified herein, the latest version of the following criteria, standards, and specifications shall apply: 2015 edition; Pima Association of Governments (“PAG”) Specifications – 2014 edition as edited by this Final CMP; Pima County Signing Manual; Pima County Marking Design Manual, and the Manual on Uniform Traffic Control Devices (“MUTCD”) will be used for the bases of standards for Vigneto. Vigneto reserves the right to also utilize Maricopa County Association of Governments (“MAG”) Specifications and Details - 2015 edition to supplement and/or replace Pima County Subdivision and Development Street Standards and PAG Specifications with the approval of the City Engineer. Where conflicts exist between the above design criteria, standards and specifications, the design engineer, at their discretion with the approval of the City Engineer, will choose the design criteria, standard or specification that they determine best fits the needs of the Project.

Vigneto - Roadway Design Standards			
*For Local Street Standards see section 4.J.xii ROADWAY DESIGN STANDARDS			
Cross-Section	Arterial	Collector	Town Center Local
Minimum Right-of-Way	120	80	56
Minimum Right-of-Way at Cul-de-Sac	N/A	N/A	60
Right-of-Way Radius at Intersections (ft)	25	25	25
Through Lanes	4	2	2
B/C to B/C Dimensions (ft)	27***	44	40



Cross-Section	Arterial	Collector	Town Center Local
Sidewalk	16' Detached Multi-Modal Pathway One Side	5' Detached or Attached One Side	6' Detached or Attached Both Sides
Curb Return Radius (ft)	30	30	25
Median Width, R - Raised, P - Painted (ft)	15 R	None	None
Design Speed (mph)	45	35	30
Posted Speed (mph)	35-40	30	25
Maximum Grade	6%	8%	10%
Minimum Grade	0.5%	0.5%	0.5%
Vertical Curve Required when Breakover Equals or Exceeds:	1%	2%	2%
Driveway Spacing Minimum (ft)	425	165	165
Minimum Intersection Spacing (ft)	1,320****	660	165
Length of Transition for 2% Superelevation	134	116	N/A
Minimum Radius of Horizontal Curve without Superelevation**	1,039	510	333
Minimum Radius of Horizontal Curve with 2% Superelevation**	794	408	N/A
Allowed Deflection Angle at Intersection (Degrees)	0	10	10
Min. Tangent Length Approaching Intersection (measured from edge of street)*	300	200	150



N/A = Not Applicable
*The intersection tangent can be eliminated if the curve radius approaching the intersection is doubled and does not extend past the centerline of the intersecting street.
**Minimum radius may be reduced if design and posted speed are reduced respectively.
***Back of Curb for Arterial sections will be 27 feet wide for both directions of travel.
****For major facilities (Commercial / Large Rec. Centers) access shall be allowed at adequate distance from Roundabout.

4.B.v Stormwater Infrastructure Design Standards

The following criteria shall apply to the design of the Project’s roadway stormwater infrastructure. In lieu of these standards, or where specific criteria are not identified herein, the design engineer may follow the design criteria identified in the latest version of the PCRFC stormwater design guidelines.

Drainage Feature	Peak Frequencies	
	2-year through 50-year	100-year
STREETS		
Criteria for Street with Curb and Gutter (longitudinal flow) common to all Street Classifications	For all storm frequencies up to and including the 100-year: Channel and/or storm drain systems installed as needed to meet street drainage criteria. Runoff to be contained 12-inches below the finished floor of adjacent buildings.	
Arterial Streets	2-year: One 10-foot dry driving lane maintained in each direction, and flow depths not to exceed curb height.	dmax vehicular travel lane = 8-inches
Collector/ Local Streets	2-year: Flow depths not to exceed curb height.	dmax vehicular travel lane = 8-inches



Criteria for Street without Curb and Gutter (Longitudinal Flow) Common to All Street Classifications	For all storm frequencies up to and including the 100-year: Runoff to be contained 12-inches below the finished floor of adjacent buildings.	
	Runoff conveyed by channel with maximum water surface no greater than the lowest adjacent road grade for the storm frequency listed below by street classification.	Runoff to be conveyed by channel with maximum flow depth in vehicular travel lane as specified below by street classification.
Drainage Feature	Peak Frequencies	
	2-year through 50-year	100-year
CULVERTS AND BRIDGES		
Criteria for Cross Road Culverts Common to All Street Classifications	Runoff to be conveyed by culvert with maximum water surface no greater than the lowest adjacent road grade for the storm frequency listed below by street classification. Culvert outlet $V_{max} = 15$ fps	Runoff to be conveyed by culvert with maximum depth in vehicular travel lane as specified below by street classification. Culvert outlet $V_{max} = 15$ fps. Where flow weirs over road, suitable erosion protection shall be provided.
Arterial Streets	50-year frequency	d_{max} vehicular travel lane = 8-inches
Collector Streets	25-year frequency	d_{max} vehicular travel lane = 8-inches
Local Streets	2-year frequency	d_{max} vehicular travel lane = 8-inches
Bridges for All Street Classifications, Including Pedestrian Bridges	N/A	Runoff to be conveyed under road with 2-foot freeboard below bridge low chord.



LOW WATER CROSSINGS		
Criteria for Low Water Crossings Common to all Street Classifications	A safe vehicular route shall be provided to all homes, for all storm frequencies up to and including the 100-year such that dmax vehicular travel lane = 8-inches. Where alternative 100-year dry access routes are provided, dip or low water crossings are allowable. At these low water crossings appropriate safety measures (signage, flow depth gages, etc.) shall be specified by the design engineer.	
Drainage Feature	Peak Frequencies	
	2-year through 50-year	100-year
STORMDRAIN		
Acceptable Materials	Corrugated Metal Pipe, High Density Polyethylene Pipe (“HDPE”), Reinforced Concrete Pipe (“RCP”) and any other pipe materials approved and specified by the City Engineer.	
Design Parameters	Hydraulic Grade Line (“HGL”) to remain 1-foot below finished grade surface at manhole and inlet locations during 2-year design storm event.	HGL to remain 8-inches or less above finished grade surface at manhole and inlet locations, and a minimum of 12-inches below all adjacent finished floor elevations during 100-year design storm event.
STORMWATER RETENTION/DETENTION BASINS		
Criteria Common to All Stormwater Storage Basins	N/A	Minimum storage of first flush (0.5 inch) runoff from paved surfaces.
Retention Basins	2-, 10- and 50-year peak discharge: Q_{post} reduced to $< Q_{pre}$	Q_{post} reduced to $< Q_{pre}$
Detention Basins	2-, 10- and 50-year peak discharge: Q_{post} reduced to $< Q_{pre}$	Q_{post} reduced to $< Q_{pre}$



Basin Geometry	N/A	<p>1. Basins shall typically have side slopes set at 4:1 or flatter. Steeper side slopes, or retaining walls, may be used at the design engineer's discretion.</p> <p>2. Basin design storage shall typically be kept at 3 feet or less in depth. Greater storage depths are allowed at the design engineer's discretion when mitigating safety provisions including use of flatter side slopes (6:1), benching (minimum of 10 feet in width), and limiting excess depths to only portions of the basins (e.g. sloping basin bottom to low point) are provided.</p>
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Drainage Feature	Peak Frequencies	
	2-year through 50-year	100-year
Basin Geometry	N/A	3. Unless access to a basin is restricted (by fencing or other type of barrier) in no case shall the storage depth for a basin shall exceed 5 feet.
Dewatering	N/A	Stormwater shall be dissipated within 12-hours of the end of a rainfall event from storage basins with watersheds of 10 acres or less. For basins with watersheds greater than 10 acres, dewatering must occur within 24 hours. The primary means of stormwater removal will be through gravity bleed-off pipes to adjacent drainage ways. Natural infiltration, drywells or other means as approved by the City Engineer are also acceptable. A combination of the various means of dewatering may be used for dewatering calculations. Measured percolation and infiltration test results shall be de-rated by 50% for purposes of estimating the dry-out period.



DELINEATION OF NATURAL FLOODPLAINS - NON-FEMA		
Requirement for Delineation of Natural Floodplain	N/A	<p>Q100 < 100 cfs, Flow depth ≤ 1-foot: Limits do not have to be delineated, but lowest floor requirements within a Non-FEMA Delineated Floodplain apply.</p> <p>Q100 ≥ 100 cfs or</p> <p>Watershed Area ≥ 0.25 sm: Floodplain limits and Water Surface Elevations (“WSEL”) are to be defined as part of the PUP process and shown on subsequent Grading and Drainage Plans, and the Plat.</p>
	Peak Frequencies	
Drainage Feature	2-year through 50-year	100-year
ENGINEERED CHANNELS		
Geometry	N/A	<p>1. The maximum channel design flow depth should typically not exceed 3 feet.</p> <p>2. Maximum channel side slopes shall generally follow the following:</p> <p style="padding-left: 40px;">Earthen and turf lined- 4:1</p> <p style="padding-left: 40px;">Riprap- 3:1</p> <p style="padding-left: 40px;">Shotcrete- 1:1</p> <p style="padding-left: 40px;">Concrete-Vertical</p>
Permissible Velocities	N/A	<p>Permissible velocities for unlined channel segments shall be in accordance with PCRFC guidelines or geotechnical recommendations for the site-specific soil, but generally should not exceed 5 fps. Velocities for non-rigid lined channels (riprap, etc.) shall generally not exceed 9 fps. Rigid lined channels (concrete, shotcrete, etc.) shall generally be designed with maximum velocities below 15 fps.</p>
Freeboard	N/A	<p>A minimum of 1-foot of freeboard shall typically be provided in channels during the 100-year design event.</p>



4.B.vi Landscape and Plant Infrastructure Design Standards

All development within Vigneto shall meet or exceed the landscaping requirements of this Section and shall conform to the Approved Landscape Plant Palette set forth in Appendix C.

The Approved Landscape Plant Palette - May be revised by a minor amendment to the Final CMP or as the approved plant list from Water Wise of University adds additional plants.

All Commercial and Industrial Uses - Shall provide landscaping within the front setback area or between the building and the street frontage, whichever is less. On corner lots, landscaping is to be provided on both street frontages within the setback area or between the building(s) and the street frontages, whichever is less.

Public Roadway Improvements - Landscaping shall be provided by the Developer between the public roadway improvements and the adjacent property line. Landscaping within the public right-of-way (including medians) on arterial and collector streets shall include one (1) tree and three (3) shrubs for each twenty (20) feet of street frontage and achieve a minimum fifty percent (50%) vegetative coverage at mature plant size. A minimum of sixty percent (60%) of the required trees shall be fifteen (15) gallon or larger. Landscaped areas along major arterial streets shall be contoured or bermed to provide variations in grade.

Developed Open Space - Landscaping within Vigneto shall achieve a minimum fifty percent (50%) vegetative coverage (plant size at maturity) for all landscape areas. A minimum of sixty percent (60%) of the required trees shall be fifteen (15) gallon or larger. Any open space that is required to remain natural is exempt from this requirement

Landscaping in Sight Triangles - Landscaping allowed within the area bounded by the street line of such corner lot and a line joining points along said street lines twenty-five (25) feet from the point of intersection shall be a maximum height of two (2) feet. Landscaping in the public right-of-way not within sight distance triangles and safe stopping sight distance areas may exceed two (2) feet in height. Trees within sight distance triangles and safe stopping sight distance areas may be allowed in the public right-of-way as long as the canopy is above seven (7) feet and is of a single trunk variety with a maximum of 12-inch diameter.

The following guidelines shall be applied to all landscape design:

- All landscaping improvements shall include an industry standard irrigation system. Where landscaping and vegetative plants do not require irrigation, and the plants are drought resistant, irrigation is not required.
- All landscape areas may be finished with a natural topping material which may include, but not be limited to, the following: turf, groundcover, decomposed granite, river run rock or native soils.
- Landscaping should be used to frame, soften, and embellish the quality of residential environment, to buffer units from noise or undesirable views, and to separate frontage roads within the Project from public streets.



- The use of drought-tolerant trees, shrubs, and groundcovers is encouraged.
- Drought-tolerant plants are acclimated to the weather and soil conditions of the area and, therefore, have a higher transplant success rate and require less maintenance.
- Inorganic landscape features, such as granite ground covers and boulders, should be limited to materials indigenous to the area or to materials similar in color and appearance to these materials.
- Limit turf areas used in conjunction with other landscaping design elements. Reduction in turf reduces maintenance time and expense.

Water Use - Will be thoughtfully considered to preserve this precious resource. Water features within the Project will be designed as effluent recharge lakes and storage lakes. To provide appropriate habitat and to soften edges of these features, suitable aquatic plants will be selected. Non-potable water will be used for these water features. It will be necessary to utilize potable water during the preliminary stages of the development until such time sufficient effluent is generated to support these water features.

4.B.vii Swimming Pools

Swimming Pools, and Semipublic Swimming Pools, (“Swimming Pools”) - Are encouraged in each Planning Unit area to serve the residents, families, kids, swimming clubs, water sports of any kind, schools, fitness facilities, private recreational establishments, recreation facilities within the Final CMP. Where possible, swimming pools, are encouraged to offset the need for swimming pools in back yards of individual homes. However, back yard swimming pools are not prohibited. Swimming pools are not required but encouraged to be integrated and designed with various applications for entry and viewing including; sandy beaches, docks, conventional pool edges, and boardwalks. Swimming pools, may be integrated into Mixed Use areas as an amenity and or park feature. Water slide parks are allowed, with controlled access. Swimming Pools for public swimming shall be maintained to standards as required by applicable regulatory agencies. All Swimming Pools are encouraged by not required to allow alternative energy sources for heating, cleaning, operations, and maintenance. Swimming Pools are allowed in all land use categories and require a building permit but do not require Site Plan approval.

4.B.viii Multi-Modal and Trail System Infrastructure Design Standards

A comprehensive network of Multi-Modal paths, Sidewalks, Multi-Use lanes, paths, and Trails (“Trail System”) will link each neighborhood to various Mixed Use and Open Space within the Final CMP. The Trail System will provide an important part of the overall circulation system for Vigneto by linking individual neighborhoods to all recreational facilities, social centers, retail shopping, schools, churches, public and private facilities and general employment uses.

The Trail System will be located near or adjacent to streets and roads and, where possible, will have significant separation from vehicular traffic. The Trail System will also utilize wash features and natural arroyos between common areas and neighborhoods, and may be combined with the drainage system for Vigneto to allow joint use of underpass areas for grade-separated crossings.



As necessary, grade separated crossings may be utilized to facilitate continuous Trail Systems throughout the Final CMP.

The Trail Systems approved surface materials include, but not be limited to, natural soil, stabilized decomposed granite, concrete, and/or asphalt or any other surface approved surface submitted to City Engineer, and the approval shall not be unreasonably with-held.

The final location of the Trail System and design specifications shall be defined in each Planning Unit. The Trail System will be prepared as a general site plan for each Planning Unit, and show the general location of the intended Trail System for review and comments by the Zoning Administrator. The final location and construction design of the Trail System will be submitted to the City Engineer for approval as part of the Civil Infrastructure Plans within each Planning Unit. The phasing of the Trail System may occur as required and determined by the developer.

Multi-Modal Pathways - Low Speed Vehicles (“LSVs”), bicycles, and pedestrians will all be able to travel on the Multi-modal pathways. The Multi-Modal Pathways will be designed to accommodate Low Speed Vehicles (“LSVs”), bicycles, and pedestrian travel. An LSV means any 4-wheeled motor vehicle whose top speed is greater than 20 miles per hour, but not greater than 25 miles per hour. LSVs include neighborhood electric vehicles (as defined by Arizona Revised Statutes Section 28-101(39)) and golf carts (as defined by Arizona Revised Statutes Section 28-101(26)) whose speed is not greater than 25 miles per hour. Multi-modal pathways will have a minimum width of 16 feet and will be located adjacent to one side of arterial roadways, within portions of the Community Multi-Use Corridor, and potentially other appropriate locations as determined in the Traffic Circulation/Transportation PUMP for each Planning Unit. The multi-modal pathways will utilize underpasses when crossing arterial roadways. Collector crossings will be at-grade and offset from arterial street intersections to reduce conflict with vehicular traffic. (Reference Illustration 6)

Arterial Roads - LSVs will not be permitted to travel on arterial roads, due to the posted speed limit of 35 mph and the availability of the multi-modal pathways; signage will be posted on all arterial roads prohibiting their use by LSVs. The maximum speed for LSVs on the multi-modal pathways will be 20 mph.

Collector Roads/Multi-Use Lanes and Sidewalks - Marked multi-use lanes will be designed to accommodate LSV and bicycle travel. Multi-use lanes will have a minimum width of 7 feet from face of curb to center of striped lane and will be located within the pavement area of all collector roads. Collector roads must have a posted speed limit of less than 35 mph.

Local Roads - LSVs, bicycles, and pedestrians will mix with vehicular traffic on local roads, which will be posted with a maximum speed limit of 15 mph.



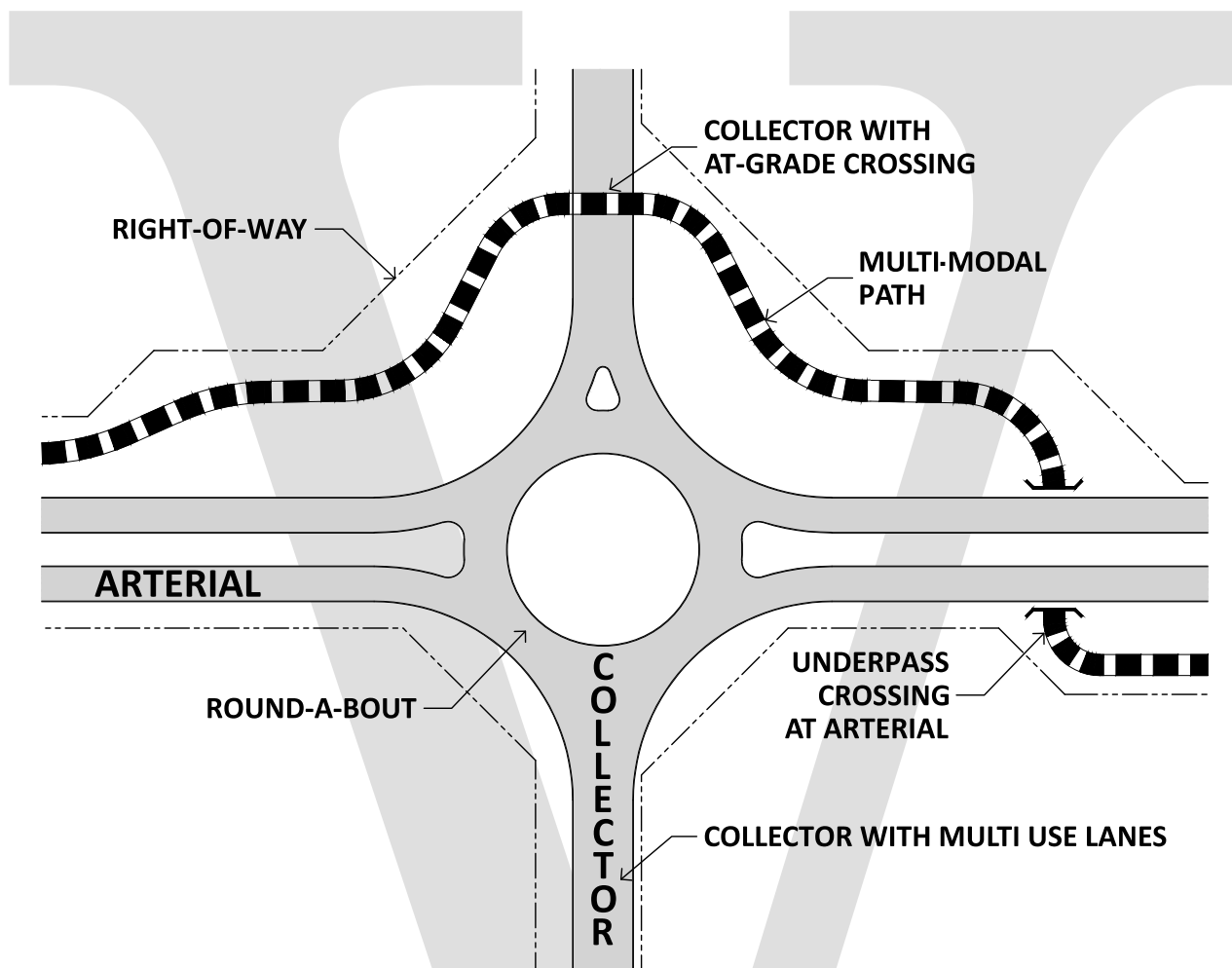


Illustration 6 – Pathway crossings at Arterials and Collectors

Sidewalks - A 5-foot pedestrian sidewalk will be located adjacent to one side of all collector roads. The sidewalk may be separated by a 6-foot landscape area from the adjacent back of curb or may be attached to the curb.

Other Trails and Paths - Vigneto will also feature additional trails and paths near or within designated corridors, greenbelts, adjacent to washes, and other naturally occurring conditions. These other trails, and paths, will be more nature oriented, and will most likely be soft surface, however hard surface trails and paths are not prohibited.



Design Standards for multi-modal pathways and multi-use lanes are as follows:

Trail System Design Standards		
	Multi-Modal Pathway	Multi-Use Lanes
Path Location	Adjacent to one side of all arterial streets, portions of Community Multi-Use Corridor, and other select locations	Within paved area collector streets
Min. Width	16'	7'
Intended Users	LSV, NEV, Bicycle, Pedestrian	LSV, NEV, Bicycle
Max. Roadway Speed	N/A	35 MPH
Min. Setback from Roadway	15' preferred 12' min.	Shared Roadway
Path Material	Concrete or Asphalt *	Same as Roadway
ADA Compliant **	No	No
Min. Vertical Clearance	8'	N/A
Min. Side Clearance	3'	N/A
Design Standards not provided will be defined by the Planned Unit Plan. *Final surface material shall be defined in the Planned Unit Plan. ** Necessary slope required for underpass design may not be ADA compliant.		

4.C Subdivision Design Standards

Standards and Guidelines - This subdivision design standard provides standards and geometric requirements for the design and construction of improvements for the Vigneto. Roadway facilities may include local streets, street signing, pavement markings, traffic calming, bicycle paths, and trails, and other facilities. Where specific criteria are not identified herein, it shall be at the discretion of the design engineer to follow the design criteria identified in the latest version of the Pima Association of Governments (“PAG”) Standard Specifications and Details or the Maricopa Association of Governments (“MAG”) Uniform Standard Specifications and Details.

Civil Engineering Plans - Construction Improvement plans prepared by the Civil Engineer will be submitted to the City Engineer for review and approval. The Construction Improvement plans will meet the requirements of the PUMP’s for each discipline of civil engineering.



Required Easement Dedication - The following easements shall be dedicated on a final plat or map of dedication (“MOD”) as appropriate:

Public Utility Easement (“PUE”) - PUEs shall be located adjacent to at least one side of the dedicated street right-of-way of private roadway tract. PUEs may not be located behind walls but can be located within the side or back of lots as long as extra width or depth has been provided to accommodate the PUE. Landscaping installed in PUEs shall be of the shallow root, and non-intrusive variety, and shall be maintained by the property owner.

Vehicular Non-Access Easement (“VNAE”) - A one-foot wide VNAE for private lots is required adjacent to all greenbelts and open space areas. The ownership and maintenance of the VNAE remains with the property owner of the parcel from which the VNAE is granted.

Sight Visibility Triangle Easement (“SVTE”) - Sight Visibility Triangle Easements will be used as a means to limit the height of structures, vegetation, and other improvements on corner properties immediately adjacent to intersections. SVTEs shall not preclude additional sight visibility triangle restrictions per American Association of State Highway and Transportation Officials (“AASHTO”) calculations. Vegetation placed within the SVTE shall be of a low variety that remains below 24 inches when mature. Trees can be considered within the SVTE as long as the canopy is above seven feet, and is of a single trunk variety with a maximum 12-inch diameter.

Number of Roadway Intersection Legs - The maximum number of legs at an intersection is four with the desired number being three.

Lot Depth to Width Ratio - Typical lot depth to width ratio of the useable lot area should not exceed three to one unless necessary due to roadway alignment configuration, other physical constraints or as otherwise approved. The three to one depth to width ratio may be exceeded if the rear lot lines extend into open space buffer zones.

Dead-End Roadways - All permanent dead-end roadways greater than 150 feet in length will be designed with an adequate turn around area at the dead-end. Bulb-head cul-de-sacs are preferred for turnarounds (see Section 4.J.xiii Roadway Design Standards for specific design standards and guidelines). T-shaped (Hammerhead) turnarounds are also allowed. Turn-around areas are not required for dead end roadways less than 15 feet in length.

Dead-end Roadway Length - The maximum length of a dead-end roadway is 660 feet as measured to the back of curb of the cul-de-sac/hammerhead unless additional turnaround areas are provided at a maximum spacing of 660 feet.

Knuckles - Knuckles can be used at roadway intersections with two legs to provide a turn-around and additional access for lot frontage. Knuckles are permitted between intersections to improve accessibility to odd-shaped sites (See Section 4.J.xiii Roadway Design Standards for specific design standards and guidelines).

Block Length - The maximum block length will be one thousand three hundred twenty feet measured along the centerline of the roadway and between intersecting street centerlines, except when a roadway is broken up by a traffic calming device which is effectively considered a



street intersection when determining block length. Examples of traffic calming devices include but are not limited to: chokers, chicanes and curvilinear roadways. The block length of a curvilinear roadway is determined by the maximum line of sight provided within the roadway.

Retaining Wall - The maximum height of a retaining wall shall not exceed 15 feet. For conditions where more than 15 feet of retained earth is necessary, a terrace bench can be used. The minimum width of the terrace is 4 feet but shall increase up to 6 feet at a 1:1 ratio as the lower wall height increases from 4 to 6 feet. Walls retaining greater than 8 inches of earth will require certification by a structural engineer and supporting calculations.

Subdivision Grading - Subdivision grading design standards include but are not limited to the following:

- Cut and fill slopes shall be no steeper than 1.5:1, unless stabilized or otherwise provided for in the approved geotechnical report.
- Cut and fill slope 3:1 or less steep shall be revegetated.
- Cut and fill slopes greater than 3:1 shall be protected by appropriate erosion control measures.
- For retention/detention basin grading standards, see Section 4.J.xiv Subdivision Stormwater Management Design Standards.
- The maximum cross slope within a Public Utility Easement and water/sewer line easements is 8:1.
- Buildings shall be set back from the toe and top of slopes in accordance with building codes and approved geotechnical report. This shall not reduce the required building setback from property lines.
- When single-family lots are mass graded and designed to drain to the fronting roadway, the minimum slope for conveyance of stormwater runoff is 0.5%.
- For single-family residential lots, the finish floor shall be set a minimum of 8 inches above the finish pad elevation.
- For additional single-family lot grading standards, see Section 4.J.xiv Subdivision Stormwater Management Design Standards.

Driveway Slopes - The typical minimum and maximum driveway slope for a residential lot is 2% and 12% respectively.

4.C.i Potable Water Subdivision Design Standards

The design criteria provided in the table below shall apply to the design of the water system within the subdivision parcels. Where specific criteria are not identified herein, the latest version of the following design criteria, standards and specifications will apply:

- The Tucson Water Design Standards Manual,
- The Tucson Water Standard Specifications and Details Manual,
- The Pima County Association of Governments (“PAG”) Standard Specifications and Details
- The Maricopa Association of Governments (“MAG”) Uniform Standard Specifications and Details for Public Works Construction., as approved by City Engineer.



Where conflicts exist between the above design criteria, standards and specifications, the design engineer, at their discretion and as approved by the City Engineer, will choose the design criteria, standard or specification that they determine best fits the needs of the Project.

General Water Requirements	
Design Criteria	Description
Acceptable Pipe Materials	Polyvinyl Chloride (“PVC”) AWWA C900/C905; Ductile Iron Pipe (“DIP”)
Pipe Size	Pipes shall be sized to meet pressure and velocity requirements during maximum day plus fire flow conditions. Minimum allowable pipe size is 6-inches.
Location/Alignment	<p>In general, water lines shall be on the north and east side of the street and aligned parallel to property lines or street centerlines.</p> <p>Water lines shall be placed under the paved section of the road or 2 feet behind the curb.</p> <p>Water lines shall maintain a minimum of 6 feet of separation from sewer lines.</p> <p>Curvilinear pipes are allowed as long as pipe joint deflections do not exceed one-half of the maximum joint deflection recommended by the pipe manufacturer.</p>
Easement Requirements	Where possible, water lines shall be located within the public right-of-way or the private street tract. If a water line must be located outside the public right-of-way or private street tract, it shall be placed within a minimum 15-foot wide water easement (for 6-inch and 8-inch lines) or a minimum 20-foot wide water easement (for lines larger than 8-inches).
Valves	<p>Two (2) isolation valves shall be provided at tees.</p> <p>Three (3) isolation valves shall be provided at crosses.</p> <p>Maximum spacing of water distribution isolation valves shall be as follows:</p> <p>800-foot intervals within residential development.</p> <p>Isolation valves shall be located at the point of curvature (“PC”) of the curb return at street intersections, and aligned with the property line or lot line at mid-block locations.</p>



Fire Hydrants	<p>Fire hydrant spacing distance shall be measured along the centerline of the street or route that the fire truck will most likely travel.</p> <p>Maximum fire hydrant spacing shall be as follows: 500-foot intervals within residential development.</p> <p>Fire hydrants shall be installed to provide a minimum 2-foot clearance and a maximum 6-foot clearance between the back of curb and the nut on the fire hydrant nozzle.</p>
Services	<p>Water meters shall be located a minimum of 2 feet from lot line and outside of driveways, with the meter installed a minimum of 1-foot behind the back of curb. Water meters may be paired on a common lot line.</p>
System Performance	<p>Required Residential Fire Flow: Per 2012 International Fire Code (“IFC”) in accordance with the existing City Code.</p>
Pressure Reducing Valves	<p>Pressure Reducing Valves (“PRV”) are required on individual service connections where pressures exceed 80 psi.</p>
Backflow Prevention	<p>Per City of Benson Backflow Prevention and Cross Connection Control</p>

4.C.ii Wastewater Subdivision Design Standards

The design criteria provided in the table below shall apply to the design of the wastewater system within the subdivision parcels. Where specific criteria are not identified herein, the latest version of the following design criteria, standards and specifications will apply:

- The Pima County Regional Wastewater Reclamation Department (“RWRD”) Standard Specifications,
- The RWRD Engineering Design Standards,
- The Pima County Association of Governments (“PAG”) Standard Specifications and Details,
- The Maricopa Association of Governments (“MAG”) Uniform Standard Specifications and Details for Public Works Construction as approved by the City Engineer,
- Where conflicts exist between the above design criteria, standards and specifications, the design engineer, at their discretion and the approval of the City Engineer, will choose the design criteria, standard or specification that they determine best fits the needs of the Project.



General Wastewater Requirements		
Design Criteria	Description	
Acceptable Pipe Material	Polyvinyl Chloride (“PVC”) SDR 35 or other material as approved and specified by the design engineer and as agreed and approved by City Engineer.	
Pipe Size	Minimum allowable pipe size for gravity sewer is 8-inches.	
Service Size	Minimum allowable sewer service size is 4-inches.	
Location/Alignment	<p>In general, sanitary sewer lines shall be on the south and west side of the street and aligned parallel to property lines or street centerlines.</p> <p>Sewer lines shall be laid with straight alignments between manholes. Curvilinear sewers are not allowed.</p> <p>Sewer lines shall be placed under the paved section of the road.</p> <p>It is preferred that manholes be located at the approximate center of the drive lane.</p> <p>Sewer lines shall maintain a minimum of 6 feet of separation from water lines and shall be no closer than 2 feet to the lip of any gutter.</p> <p>Manholes shall have a minimum 2-foot clearance to the lip of gutter.</p>	
Easement Requirements	Where possible, sanitary sewer lines shall be located within the public right-of-way or the private street tract. If a sewer line must be located outside the public right-of-way or private street tract, it shall be placed within a minimum 20-foot wide sewer easement.	
Minimum Cover	4 feet or as required to avoid utility conflicts and provide adequate depth to service each lot.	
Cleanouts	Allowed on dead end lines less than 150 feet long.	
Minimum Allowable Pipe Slope	8-inch	0.0033 ft/ft
	10-inch	0.0024 ft/ft
	12-inch	0.0019 ft/ft
	15-inch	0.0014 ft/ft



	18-inch	0.0011 ft/ft
Manning's n value	0.013	
Minimum Velocity (flowing full)	2.0 feet per second	
Maximum Velocity	9.0 feet per second	
Depth/Rise (d/D) Ratio	75% maximum at peak flow	

4.C.iii Reclaimed Water Subdivision Design Standards

The design criteria provided in the table below shall apply to the design of the reclaimed water system within the subdivision parcels. Where specific criteria are not identified herein, the latest version of the following design criteria, standards and specifications will apply:

- The Tucson Water Design Standards Manual,
- The Tucson Water Standard Specifications and Details Manual,
- The Pima County Association of Governments ("PAG") Standard Specifications and Details
- The Maricopa Association of Governments ("MAG") Uniform Standard Specifications and Details for Public Works Construction as approved by the City Engineer.

Where conflicts exist between the above design criteria, standards and specifications, the design engineer, at their discretion and approval of City Engineer, will choose the design criteria, standard or specification that they determine best fits the needs of the Project. Reclaimed water will not be available for indoor use at individual residences.

General Reclaimed Water Requirements	
Design Criteria	Description
Allowable Pipe Materials	High Pressure Systems: Polyvinyl Chloride ("PVC") AWWA C900/C905, Ductile Iron Pipe ("DIP"), or High Density Polyethylene Pipe ("HDPE"). Low Pressure Systems: Material as approved and specified by the design engineer.
Minimum Pipe Size	2-inches
Location/Alignment	Effluent lines shall be placed 2 feet behind the curb or as otherwise approved. Effluent lines shall maintain a minimum of 6 feet of separation from water lines and sewer lines.



	Pipe joint deflections shall not exceed one-half of the maximum joint deflection recommended by the pipe manufacturer.
Easement Requirements	Where possible, effluent lines shall be located within the public right-of-way or the private street tract. If an effluent line must be located outside the public right-of-way or private street tract, it shall be placed within a minimum 12-foot wide easement (for lines up to and including 8-inches) or a minimum 20-foot wide easement (for lines larger than 8-inches).
Design Criteria	Description
Minimum Cover	3 feet for effluent lines smaller than 12-inches in diameter. 4 feet for effluent lines 12-inches and larger in diameter.
Valves	Maximum isolation valve spacing for effluent lines without branches shall be 1/2-mile. Maximum isolation valve spacing for effluent lines with branches shall be 1/4-mile. Isolation valves shall be placed on branched lines to allow for proper pipe isolation as determined by the design engineer.

4.C.iv Roadway Subdivision Design Standards

Design Standards and Guidelines – Where specific design criteria are not identified herein, the latest version of the criteria, standards, and specifications of the following shall apply; The American Association of State Highway and Transportation Officials (“AASHTO”) "A Policy on Geometric Design of Highways and Streets", Development of Bicycle Facilities, and Guide for the Planning, Design and Operation of Pedestrian Facilities, and the Manual on Uniform Traffic Control Devices (“MUTCD”) prepared by the U.S. Department of Transportation are acceptable references for the design engineer to base the design of improvements.



Local Roadway Design Standards			
Description	Local	Description	Local
Minimum Right-Of-Way	36 ft.	Minimum Right Hand Storage Length	N/A
Minimum Right-Of-Way at Cul-de-sac	50 ft.	Minimum Left Hand Storage Length	N/A
Right-Of-Way Radius at Intersections	25 ft.	Length of Transition for 2% Superelevation	N/A
Through Lanes	2	Minimum Radius of Horizontal Curve without Superelevation **	200 ft.
Pavement Minimum Width	20 ft.***	Minimum Radius of Horizontal Curve with Superelevation **	N/A
B/C to B/C Dimensions	Varies dependent on curb width. 24 ft. typical	Minimum Length of Tangent between Reverse Curves	100 ft
Sidewalk	Not Required	Minimum Length of Tangent between Curves in Same Direction	150 ft
Curb Return B/C Radius	30 ft	Minimum Horizontal Curve Length	75 ft
Min. Knuckle Reverse Curve B/C Radius	30 ft	Maximum Intersection Spacing	110 ft
Minimum Cul-de-sac B/C Radius for roll curb****	42 ft		
Minimum Knuckle Bulb B/C Radius	45 ft		
Minimum Hammerhead Length (T-shaped)	114 ft		



Local Roadway Design Standards

Median Width, R - Raised, P - Painted	None		
Design Speed	25 mph		
Posted Speed	25 mph		
Maximum Grade	10%		
Minimum Grade	0.35%	Allowed Deflection Angle at Intersection	15 degrees
Vertical Curve Required when Breakover Equal or Exceeds:	2%	Minimum Tangent Length Approaching Intersection (measured from face of curb)*	100 ft

N/A = Not Allowed

* The intersection tangent can be eliminated if the curve radius approaching the intersection is doubled and does not extend past the centerline of the existing street.

** Minimum radius may be reduced if design and posted speed are reduced respectively and/or traffic calming device is provided.

*** 4' clear space shall be provided on each side of 20' paved roadway. No trees or structures are allowed in the clear space. Shrubs up to 3' high allowed.

**** Dimensions to F/C for vertical curb.

On-street Parking - On-street parking will not be permitted with a 22 feet wide roadway section regardless of public or private status of the roadway. Parking courts will be used for visitors within high density (6 du/ac or more) subdivisions.

Survey Monument - Survey monuments will be installed at all street intersections and points of curvature. The monuments shall be set to the City of Benson datum.

Pavement Design - Pavement design standards and mix design will be per PAG or MAG standard specifications and as determined by the geotechnical engineer.

Horizontal and Vertical Curves - When horizontal and vertical curves are combined, it is preferred but not required that the horizontal curve leads and follows the vertical curve.

Lane/Intersection Alignment - Maximum offset of lanes across street intersections from each other is 2 feet. The offset dimension is measured from the traffic lane centerline to the corresponding traffic lane centerline at the nearest point of the curb return across the intersection.

Roadway Alignment and Profile - Intersections occurring on the crest of a vertical curve is



undesirable unless adequate sight distance is provided. When the grade of the through roadway is steep, flattening through the intersections is required as a safety measure. The intersecting street profiles and cross slopes shall be coordinated to ensure a safe and comfortable driving surface. The approach to an intersection shall have a relatively level area with a grade of not more than five percent for a distance of twenty-five feet measured from the nearest right-of-way line of the intersecting street. A maximum cul-de-sac pavement slope of 5% and a minimum of 0.5% are recommended.

Pavement Cross Slope and Crowns - Local roadways will typically have a normal crown that is a two-way cross-slope with the cross section high point on the street centerline. A raised crown with a cross slope of 1.5 to 3 percent (with 2% preferred) is required on all crowned roadways. One-way crowns are allowed when necessary for stormwater conveyance with cross slopes of 1 to 3 percent permissible. Inverted crowns are also permissible where determined to be advantageous for stormwater conveyance, from a grading perspective or to minimize excessive driveway slopes. Inverted crown slopes can vary between 1% and 3% (2% preferred). Inverted crown cross slopes may be increased to 4% where necessary on private streets.

Pavement Drainage - Stormwater runoff can be removed from the pavement area by any combination of the following:

- Catch basin with stormwater pipe
- Scupper with spillway
- Depressed curbing with spillway or drainage swale

Valley Gutters at Intersections -The minimum grade for valley gutters is 0.5%.

Roadway Curbing - The following types of concrete curb are allowed:

Vertical Curb - 6-inch vertical curb and gutter may be used where roll curbs are specified if drainage considerations make such use desirable. Vertical curbs with gutter are to be constructed in accordance with MAG Standard Detail 220 Type 'A'. Vertical curb and gutter shall match the adjacent pavement slope to the gutter cross-section direction. Vertical curb is preferred when a local roadway is adjacent to large open space areas.

4-inch Roll Curb - 4-inch roll curb is permitted on local single family residential streets.

6-inch Roll Curb - 6-inch roll curb is permitted on local single-family residential streets if drainage considerations make such use desirable. 6-inch roll curb is three feet wide so when transitioning to and from 6-inch roll curb to vertical or 4-inch roll curb, the pavement width along the edge of curb lip shall remain constant. The additional foot of width shall be located at the back of curb. The transition from 4-inch roll or 6-inch vertical to 6-inch roll curb shall be ten feet long.

Median Curb - In locations where raised medians are constructed, a vertical curb with gutter similar to MAG Standard Detail 220 Type A modified with an inverted gutter which drains away from the face of curb may be used. In certain situations the median curb can be constructed per MAG Standard Detail 222 Type A or a 4-inch roll curb can be used in low speed and low volume roadways to facilitate truck turning movements. In cul-de-sacs, raised medians shall have roll



curbs and vegetation that does not exceed two feet in height.

Ribbon Curb - Ribbon curb may be used in lieu of roll curb for local residential streets. When ribbon curb is used, drainage runoff from the road shall not drain with the road but shall be directed to a drainage swale or other appropriate stormwater management facility.

Private Roadways - Private roadways are allowed as an alternative to public right-of-way. Private roadways contained in the plat shall have the right reserved to public utilities to install and maintain facilities within the roadway boundaries. Private roadway tracts shall extend from back of curb to back of curb and shall be dedicated as a tract on the final plat. Private roadways will include an eight-foot public utility easement (“PUE”) on one side of the roadway tract and an option for a twelve-foot water line easement on the opposite side if the domestic water line is to be located behind the curb.

Gated Entries - Gated entrances shall be allowed where all roadways are platted as private tracts and maintained by the HOA. Gated entries shall meet the following requirements:

- Stopping locations (keypads, card-readers, guard shack, etc.) shall be set back at least 50 feet from the right-of-way of the cross street to avoid interfering with through traffic and to provide protection for entering vehicles. If a Traffic Impact Study (“TIS”) is performed for the subdivision, it shall include a queuing analysis for the gated entry to ensure sufficient storage capacity (measured from the right-of-way line).
- The minimum width of the vehicular gate must have a 26-foot clear opening width to allow for entrance and egress. If a median island separates the two directions of travel, a minimum 14-foot entrance in each direction shall be provided.
- Any equipment or obstructions (such as keypads or card-readers) shall be installed in the curbside area.
- The design of the entrance shall allow vehicles that do not go past the gate to turnaround without interfering with other traffic. The minimum turnaround radius shall be 42 feet.

Controlled Access Roadways - Controlled Access Roadways may include public or private local streets, and collectors. Where right-of-ways are considered public right-of-ways, these right-of-ways will be treated as public streets. Controlled access points on public right-of-ways will be managed the same way as gated entries.



4.C.v Stormwater Subdivision Design Standards

In addition to the standards listed below, the criteria provided in Section 4.J.5 shall also apply to the design of the Project's subdivision stormwater infrastructure. Where specific criteria are not identified herein, it shall be at the discretion of the design engineer to follow the design criteria identified in the latest version of the Maricopa or Pima County stormwater design guidelines.

Drainage Feature	Peak Frequencies	
	2-year through 50-year	100-year
MINIMUM FINISHED FLOOR ELEVATIONS		
Lowest floor within or adjacent to a natural, Non-FEMA Delineated Floodplain.	N/A	Lowest floor elevation for houses that are to be located within a Delineated Floodplain shall be elevated a minimum of 12-inches above the highest adjacent 100-year WSEL.
Lowest floor not within or adjacent to a FEMA or Non-FEMA Delineated Floodplain.	N/A	Lowest floor elevation for houses shall be elevated a minimum of the following, whichever is higher: 14-inches above the lowest drainage outfall for the lot unless evaluated and certified by a registered professional engineer, or 12-inches above the Highest Adjacent Grade within 10 feet of the foundation of the building or proper waterproofing to 12-inches above the Highest Adjacent Grade is provided.



4.D Architectural Design Standards

4.D.i Residential Design Standards

The goal of the Vigneto design guidelines is to create and maintain a livable and attractive development. These guidelines will help to ensure considerations for safety, spaciousness, attractive appearance, streetscape, recreation, outdoor enjoyment, residential privacy and compatibility among land uses and multiple housing types.

Recreational facilities - Each dwelling should be located within three thousand (3,000) feet of the nearest common open space or within five hundred (500) feet of a pathway linkage (sidewalk/bike path) to a recreation facility.

Neighborhood identity - Entry monumentation, banners, public art, and variations in lighting fixtures or street furniture will be utilized to distinguish neighborhood units.

- Residential homes should emphasize architectural details in the front elevations, door and window details, roof overhangs, parapet walls with cap features, etc.
- The architectural character should be visually perceived from the street. The aim of the standards is to create interest through consistency in the use of architectural elements such as windows, doors, balconies, and roofs.
- Acceptable exterior building materials may include but are not limited to brick, masonry, stucco, stone, vinyl, and wood.
- All air conditioning units/mechanical equipment shall be ground mounted and be allowed within side or rear setback.
- The colors represented in Vigneto should be indicative of surrounding environmental influences or as presented to represent Old World Modern Architecture.

4.D.ii Non-Residential Design Standards

These guidelines will provide consideration for safety, reduction of traffic congestion, architectural excellence, compatible signage, landscaping/street furniture treatments in peripheral tracts and parking lots, and the integration of impacts on other properties in the vicinity.

Facilities - Project-benefiting spaces, fixtures and conveniences will be installed and maintained in accessible, secure locations.

Activity Centers - Gathering places, including performance sites, outdoor dining, recreation or relaxation areas may be provided for customers, business invitees, employees and residential neighbors at appropriate times.

Joint Use Facilities - Parking, playing fields, restrooms, drinking fountains, plazas, walkways and other facilities may be installed and maintained for Vigneto.



Transportation Amenities - Bicycle and pedestrian convenience will be a priority with consideration of bus stops, park-and-ride lots, employee shuttle services or comparable transportation amenities.

Buildings should be sited in a manner that will complement the adjacent buildings and landscape. Look to existing development around the subject site to establish a context in which to design. Building sites should be developed in a coordinated manner to provide order and diversity.

Avoid long, unarticulated building facades. Buildings with varying front setbacks are strongly encouraged.

4.D.iii Architectural Design Guidelines and Controls

The Final CMP creates a framework to allow additional planning throughout the development process of the Project. This flexibility, however, requires assurances to the broader Vigneto community that fundamental goals and concepts developed within the Final CMP will be met and maintained over time.

In addition to the Final CMP and applicable Rules as identified in Section 6, it is important for orderly development of the Project to establish a cohesive and enforceable structure for project governance. In this context, project governance contemplates three elements:

Covenants, Conditions and Restrictions - A document prepared, approved and recorded with Cochise County Recorder. CC&R's shall bind all present and future owners within Vigneto and provide for the perpetual support and maintenance of Vigneto governance entities and processes.

Homeowner's Association - A Vigneto Homeowner's Association shall be organized to ensure long-term compliance with the Covenants, Conditions and Restrictions. The Homeowner's Association will assess fees that may include but not limited to; cost of amenities as part of the financing plan for the maintenance of landscaped common areas, landscaping in the right-of-ways including medians, natural washes, parks and other facilities as well as ensuring that all 'Project commonwealth' such as street furniture is maintained and replaced as necessary.

Architectural Control Committee - This regulatory group shall be established initially by the Developer to oversee compliance with the Covenants, Conditions and Restrictions during the development stages of the Project. The Committee will review and approve building plans, specifications and design for all public and private improvements and sub-area developments contemplated within Vigneto. The Architectural Control Committee's approval will constitute a pre-condition for any subsequent municipal development approvals. The Committee will rely on the content of the Final CMP, supplementary design standards (color selector boards, material selection specifications and other standards) as well as free interpretation of the existing environmental conditions when responding to applications for review. The Committee will also interpret the appropriateness of each application to the intent of the architectural and environmental 'theme' of Vigneto.



5. Sign Regulations

Introduction - Section Fifteen of the City of Benson Zoning Regulations is incorporated as supplemented and modified in this Section 5 of the Final CMP. The Developer intends to submit a sign plan for the Project or portions thereof concurrently with the first Planning Unit Plans. If the sign plan varies from Section 5 of this Final CMP, then approval of the Planning & Zoning Commission and City Council may be required. The Monument Master Plan (Exhibit 13) and Signage Master Plan (Exhibit 14) are set forth herein after this Section 5 in this Final CMP.

5.A Intent

Signs are herein regulated in the interests of promoting traffic safety, safeguarding the public, facilitating police and fire protection, and protecting the character of the district in which they are located. This Section 5 is designed to promote the effectiveness of signs, and to prevent their over-concentration, improper placement, and excessive height, bulk and area. In general, it is intended that signs in commercial areas be of such design to facilitate recognition of the wares and services provided, but signs of activities are prohibited. The degree of restriction decreases from low density residential category uses to industrial category uses.

5.B Definitions

Sign - Any device for visual communication that is used for the purpose of bringing the subject thereof to the attention of the public, but excluding any flag, badge or insignia of any government or government agency, or of any civic, charitable, religious, patriotic, fraternal or similar organization.

Sign, Accessory - A basic category of signs which direct attention to a business, profession or activity conducted on the premises on which the sign is located, including:

- **Bulletin Board** - A wall or ground sign announcing activities of a permitted educational, governmental or recreation area.
- **Contractors' Sign** - A wall or ground sign designating the name of persons or firms engaged in construction or repair on the premises.
- **Developers' Sign** - A wall or ground sign designating the use which will occupy the premises at some future date.
- **Home Occupation Sign** - A wall sign identifying a permitted home occupation on the premises.
- **Identification Sign** - A wall, ground or roof sign identifying the permitted principal use(s), but which bears no advertising or message other than the name, year established, street number and kind of business or activity conducted on the premises.
- **Name Plate Sign** - A wall or ground sign identifying the name and address of the occupant of the premises.



- **Real Estate Sign** - A wall or ground sign advertising the premises for lease, rent or sale.
- **Subdivision Development Sign** - A wall or ground sign advertising the sale of properties in a subdivision.
- **Utility Sign** - A wall or ground sign listing parking regulations or marking the entrance or exit to a parking lot or other permitted accessory use.

Sign, Awning - Any sign painted on or attached to an awning.

Sign, Ground - Any sign, other than a pole sign, placed upon or supported by the ground independent of any other structure.

Sign, Non-Accessory - A basic category of signs which direct attention to a business, commodity, service, entertainment, or other activity or thing, not exclusively related to the premises on which the sign is located. Three special categories of non- accessory signs are:

- **Billboard** - a large non-accessory sign typically owned and erected by a sign company and located on major arterial streets and highways.
- **Directional** - a sign directing or informing the public as to the location of publicly-owned facilities; historical or scenic points of interest; educational, charitable or religious institutions; hospitals or sanitariums; and major business districts.
- **Logo** - a small non-accessory sign permitted and sponsored by The Arizona Department of Transportation under the provisions of the right-of-way Encroachment Laws to advertise specific motorists' services bypassed by the interstate highway.

Sign, Pole - A sign that is mounted on a freestanding pole so that the bottom edge of the sign is eight (8) feet or more above grade.

Sign, Political - A sign supporting the candidacy of any candidate for office or urging action on any other matter on the ballot of primary, general, or special elections.

Sign, Portable - Any freestanding sign that is not permanently affixed to the ground, a structure or a building, but does not include soda, newspaper or snack machines.

Sign, Projecting - A sign which is attached to a building or structure and extends beyond the wall of the building or line of the structure more than twelve (12) inches.

Sign, Roof - A sign that extends above the walls and is supported by the roof of a building.

Temporary Sign - A sign that is displayed no longer than thirty (30) days.

Sign Vehicle – A vehicle not currently licensed for highway travel will be considered the same as a ground sign when any sign advertising a business is painted on, displayed on or attached to the vehicle.

Sign, Wall - A flat sign placed against or attached to an exterior front, side or rear wall of a building, including signs placed parallel to and extending not more than twelve (12) inches horizontally out from the wall of a building.



Sign, Window - A sign painted on or attached to the window glass or other signs mounted on the inside of the window.

5.C General

This section pertains to all signs in all districts. Unless otherwise noted, all signs will be constructed and maintained in accordance with Section 8 of this Final CMP.

No part of any sign shall be erected within or project over any part of a public street, alley, sidewalk, or other public right-of-way, except as hereinafter provided for by this Section 5.

Requirements that apply to signs generally are as follows:

- Every sign and its supporting structure shall be designed and constructed to withstand a wind load of not less than thirty (30) pounds per square foot of area.
- No sign shall be erected, relocated or maintained so as to prevent free ingress to or egress from any door, window or fire escape.
- No sign shall be erected or maintained at or near any intersection of streets in such a manner as to obstruct free and clear vision; or at any location where, by reason of its position, shape, color, or illumination, it may interfere with, obstruct the view of, or be confused with an authorized traffic sign, signal or device, or with any device mounted on a police or fire protection vehicle; or which makes use of the words "STOP", 'DANGER', or any other word, phrase, symbol or character in such manner as to interfere with, mislead or confuse traffic.
- No sign shall be erected or painted upon or attached to any tree, rock or other natural feature, or to any fence post or utility pole. Hazardous warning or identification signs may be attached to utility structures.
- Every illuminated sign shall be so placed as to prevent any glare or reflection from being cast on any adjoining residential district, or any beam or ray of light from being directed at any portion of a public street or highway in such a manner as to create a distraction or visual hazard.
- This Section 5 shall not apply to tablets of metals, stone, or other incombustible material when built into or attached to the walls of a building or structure.
- Directional Signs, as herein defined, may be permitted in any district subject to the following requirements:
 - Such signs shall be located along a State or Federal highway or an arterial street not more than one-quarter of a mile (1,320 feet) from the intersection of turnoff ramp or roadway providing direct access from said State or Federal highway or arterial street to the facility, institution or business district to which the public is being directed.
 - Such signs shall be permitted only upon approval by the building official of the size, design and precise location of each individual sign, and written approval of the landowner.
- This Section 5 shall not be construed to prohibit or restrict the erection and lighting of Christmas displays during the Christmas season.



- The building official may, upon receipt of application and proof of need, approve an extension of removal time for subdivision development, business, and contractors' signs, provided that such extension shall not exceed one year beyond the removal date otherwise required by this Section 5.
- City-Sponsored gatepost signs marking entrances to the City or signs to its parts shall be permitted as required.
- Banners, non-governmental flag, and pennants and other devices set in motion by the wind shall be limited to one square foot of banner, flag, pennant or other devices set in motion by the wind per one hundred (100) square foot of lot. No single banner, non-governmental flag, pennant, or other device set in motion by the wind may exceed fifty (50) square feet. Larger than fifty (50) square foot single banners, flags, pennants, or other devices in motion by the wind may be allowed if the applicant obtains and approved comprehensive sign plan from the PLANNING & ZONING COMMISSION.
- Flashing, intermittent, rotating, animated; beacon or similar illuminated and audible signs are not permitted except as provided under the exemption section.
- Permits are required for all signs except those specifically exempted under the Sign Permit section.
- Signage authorizations are not transferable either in whole or in part from one building frontage or business to another.
- On buildings having more than one street frontage, the maximum allowable square footage of on-site signs is permitted for each street frontage.

Measurement of Signs - All signs shall comply with the measurement requirements as follows:

- The area of signs composed of a letter or individual letters, without an integral background, shall be computed by measuring the sum of the squared-off area of individual letters.
- For all other types of signs, the measurement used to calculate the size of the sign shall be the entire area within a single continuous perimeter enclosing the extreme limits of the sign; provided, however, that such perimeter shall not enclose any structural elements located outside the limits of the sign and not forming an integral part of the display.
- The area of double-faced signs shall be calculated only on one side if the square footage of each side is the same, the message is the same, and the basis of the sign does not exceed a thirty (30) degree angle of separation between the two sides.
- The total square footage of all face surfaces of a spherical or multi-faced sign shall be computed by measuring the sum of the squared-off area of individual letters of all face surfaces and any portion of the face surface that is an integral part of the display.



5.D Residential

Signs as hereinafter provided may be erected in residential districts:

Real Estate Signs - Non-illuminated wall or ground signs advertising the premises for lease, rent or sale are permitted as follows: For properties one (1) acre and less, no such sign shall exceed six (6) square feet in area and is limited to one (1) sign per property. For properties greater than one (1) acre, but less than forty (40) acres, one sign is permitted for each street frontage and no such sign shall exceed thirty-two (32) square feet in area. For properties in excess of forty (40) acres, one sign is permitted for each street frontage and no such sign shall exceed thirty-two (32) feet in area. For properties in excess of forty (40) acres, one sign is permitted for each street frontage and no such sign shall exceed sixty-four (64) square feet in area. In all cases, no sign shall be placed closer than ten (10) feet to the property line. Such signs shall be removed within ten (10) days subsequent to the leasing, rental or sale of the property. No permit is required for real estate signs.

Development Signs - Three (3) non-illuminated signs, none of which exceeds sixty-four (64) square feet in area and eight (8) feet in height for a development less than twenty (20) acres or ninety six (96) square feet in area and twelve (12) feet in height for a development greater than twenty (20) acres are permitted, provided that such signs shall be located no less than one hundred (100) feet to any adjoining residential private property; and further provided that all such signs shall be removed from the premises when ninety percent (90%) of the lots or properties in the development property have been sold.

Subdivision Name Signs - Permanent non-illuminated ground signs containing only the name of the subdivision; one such sign on each side of any entrance to a subdivision; subject to the approval of design, size and location by the Commission.

Utility Signs - One illuminated or non-illuminated sign at each entrance or exit to a subdivision, mobile home park, or RV park, not to exceed two (2) square feet in area per sign.

Roof Top, Projecting, and Commercial Non-accessory Signs - Are prohibited in all residential districts.

Contractors' Sign - One non-illuminated sign, not exceeding six (6) square feet in area per contractor or sub-contractor listed, nor exceeding thirty-two (32) square feet in aggregate area; provided, however, that each such sign shall be removed from the premises within twenty (20) days subsequent to completion of such construction or repair.

Home Occupation Signs - Shall not exceed two (2) square feet.

Apartment Complexes, Mobile Home and Recreational Vehicle Parks - One (1) non-illuminated sign per street frontage; not exceeding thirty-two (32) square feet each is permitted.

Bulletin Boards - May be illuminated and shall not exceed thirty-two (32) square feet.



Ground Sign - No ground sign shall be placed nearer than two (2) feet to any building or other sign; no ground sign shall exceed six (6) feet in height above grade; no part of any ground sign shall extend nearer a street line than one-half the minimum required setback for the property on which it is located.

5.E General Sign Regulations for All Business Districts

Identification Signs - An Identification Sign is permitted when multiple businesses operate from a single location. One such identification sign is permitted for each street frontage. The intent of this provision is to provide a list of separate license businesses operating from a single building or from a business center. Three (3) square feet of signage is permitted for each individual business and this signage is not counted against the total signage authorization for each business. Identification signs described above may be ground, wall or projecting type signs; however, ground signs shall not exceed twenty (20) feet in height above grade.

Window Signs - Window Signs, whether permanent or temporary, are permitted and do not count against the total signage authorization.

Portable Signs - Portable Signs that do not pose a safety hazard, as determined by the Building Inspector, are permitted provided that:

- Only one (1) portable sign per building frontage is allowed.
- Sign is no larger than 2 feet wide and 3 feet high.
- Sign is attached to the ground or building to restrict movement.
- In areas where a public sidewalk abuts the building frontage, the portable sign must be located tight against the building.

Wall Signs - No portion of a wall sign may extend above the top of the wall.

Ground and Pole Signs - Ground signs are limited to a maximum height of twenty (20) feet above grade and pole signs are limited to a maximum height of thirty (30) feet above grade, except as provided in exemption section.

Roof Signs - Roof Signs are permitted provided they do not extend above the highest peak of the roof. Buildings with flat roofs are therefore not permitted roof signs.

Projecting Signs - no portion of a projecting sign may extend above the highest point of a building frontage.

Non-Accessory Signs - One Non-Accessory Sign for each business, except home occupations, may be permitted for a period up to one year upon approval by the Planning and Zoning Commission. Additionally, the following conditions must be met:

- Non-accessory signs can be located no closer than one hundred (100) feet to each other.
- Written authorization from the landowner is provided.
- Non-accessory signs shall be limited to a maximum of twenty (20) square feet.
- Non-accessory signs are not deducted from the total signage authorization.



Artistic Murals - see exemption section.

Real Estate Signs - Non-illuminated wall or ground signs advertising the premises for lease, rent or sale are permitted provided that no such sign shall exceed sixteen (16) square feet in area, nor shall any such sign be placed closer than ten (10) feet to any adjoining lot or closer than twenty (20) feet to any street corner. Real estate signs are limited to one sign per each lot or parcel and shall be removed from the premises within twenty (20) days subsequent to the leasing, rental, or sale of the property.

Developers' Signs - One (1) non-illuminated sign advertising the use that will occupy the premises not to exceed thirty-two (32) square feet in area is permitted. Signs shall not be placed closer than ten (10) feet to an adjoining lot or closer than twenty (20) feet to the property line. Such signs shall be removed from the premises within twenty (20) days subsequent to the occupancy of the premises.

Contractors' Signs - One (1) non-illuminated sign, not exceeding twenty (20) square feet in area per contractor or sub-contractor listed is permitted, provided that each sign shall be removed from the premises within twenty (20) days subsequent to completion of such construction or repair.

5.E.i Neighborhood Commercial

One (1) or more roof, wall, ground, pole or projecting signs are permitted for each building frontage, however, no ground sign shall exceed thirty-two (32) square feet. All businesses having a building frontage are authorized fifty (50) square feet of signage. Additional signage authorization may be permitted based upon building frontage or property frontage. One (1) square foot of signage is permitted for each one (1) linear foot of building frontage or one (1) square foot of signage is permitted for each five (5) linear feet of property frontage, not to exceed an aggregate of seventy-five (75) square feet. Multiple, separately licensed businesses sharing a building frontage must also share the signage authorization.

5.E.ii Commercial/Light Industrial/Business Park

One (1) or more wall, roof, ground, pole or projecting signs are permitted for each building frontage, however no ground sign shall exceed fifty (50) square feet.

All businesses having a building frontage are authorized seventy-five (75) square feet of signage. Additional signage authorization may be permitted based upon building frontage, property frontage and location within the Commercial/Light Industrial/Business Park districts described below:

- For businesses located in the Downtown General Business District, two (2) square feet of signage is permitted for each one (1) linear foot of building frontage or two (2) square feet of signage is permitted for each five (5) linear feet of property frontage, not to exceed and aggregate of one hundred fifty (150) square feet.
- For businesses not located in the Downtown General Business District, additional signage is permitted based on the higher traffic speeds encountered in those areas. Signage in



these Commercial/Light Industrial/Business Park areas is permitted as follows: two and one-half (2 1/2) square feet of signage for each one (1) linear foot of building frontage or two and one-half (2-1/2) square feet of signage for each five (5) linear feet of property frontage, not to exceed an aggregate of two hundred (200) square feet of signage.

Multiple, separately licensed businesses sharing a building frontage must also share the signage authorization.

All businesses with frontages on the Arizona Department of Transportation (ADOT) right-of-ways must also be aware of State laws governing signage.

5.E.iii Industrial

Because industrial districts are located at the fringes of the city and increased setbacks of buildings can be anticipated to allow employee parking lots, signage authorization are very liberal to allow ease of identification of these businesses. Industrial signage authorization is regulated as follows:

- Roof top signs may extend above the roofline.
- Projecting signs may extend above the roofline.
- Pole signs are limited to a height of sixty (60) feet above grade.
- Ground signs are limited to a height of thirty (30) feet above grade.
- One non-accessory sign per business is permitted. This authorization does not include the leasing of commercial billboards already existing within the City nor does it include billboards along the Interstate.

5.E.iv Business General Notes

- A permit is required for all encroaching overhanging signs and awnings. These signs and awnings are permitted in curbed urban sections for on premise advertising.
- No advertising signs are allowed on any intersections or rural highway rights of way. Signs on frontage roads within highway R/W in urban areas are permitted by this standard.
- Signs with words "Stop", "Slowdown", etc. or signs similar in shape or color to official traffic signs are not permitted.
- Lengths of signs and awnings may vary as shown except where City or County ordinances provide smaller maximums.
- An outdoor advertising permit is required for off premise signs.
- Ground supported or portable signs shall not be placed within any right of way areas.

5.F Exemptions and Special Use

Moving and Illuminated Signs - Flashing, intermittent, rotating, animated, beacon or similar



illuminated signs shall be considered on a case-by-case basis by the Planning and Zoning Commission to determine if the proposed sign would harmonize with the area to which it is proposed. Consideration will be given to size, location, frequency and brightness of the proposed sign. In no case will such signs be permitted if traffic safety could be jeopardized or a public nuisance be created. The Planning and Zoning Commission may call upon City Police, Civic Leaders, The Public, or other Elected or Appointed Officials prior to making their decision.

Interstate (I-10) Signage - Notwithstanding any contrary provision contained in this Section 5, there shall be permitted in all commercial and industrially zoned districts, except that area from the most western extremity of I-10, Exit 302, to the eastern most extremity of I-10, Exit 303, any sign which is located within two hundred fifty (250) feet of the right-of-way of Interstate Route 10, provided said sign is no larger than seven hundred fifty (750) feet square feet, so long as said sign and the placing thereof is in conformance with the State of Arizona, Department of Transportation Outdoor Advertising control Regulations, and the State has issued a permit authorizing said sign. In calculating the area of any such sign, only the advertising display portion of said sign shall be included in determining compliance with the area limitations set forth herein above and any standards, limitations set for herein above and any standards, supporting structures, braces or accessories shall not be included in determining the sign area. Double or multiple-faced signs shall be considered as if each surface area constituted a separate individual sign. The existence of a State of Arizona sign permit shall not eliminate the need for a separate sign permit from the City.

Sign Planning - A comprehensive Sign Plan may be submitted to the Planning and Zoning Commission by the developers of a proposed commercial development which shall include the location, size, height, lighting and orientation all proposed signs, in addition to any other information deemed necessary. This sign plan may be submitted in conjunction with the required preliminary site plan for the development. If the comprehensive sign plan is found to be acceptable, i.e. if the sign areas and densities shown on the plan are in conformity with the intent of this Section 5 and if such exceptions result in an improved relationship between the various parts of the plan, exceptions to the provisions of this Section 5 shall be granted.

Murals - In order to encourage and promote a harmonious relationship between buildings and signs, the Planning and Zoning Commission shall be the authority to approve signs, which are designed into and are a part of an integrated architectural feature of a building or signs that are integrated into an artistic wall mural. Such signage, if it represents less than twenty (20) percent of the total square footage of the mural, would not be deducted from the signage authorization for that building or business.

Sign Theme - The owners of sixty (60) percent or more of the street frontage of properties on both sides of the street in any well-defined area may petition the Planning and Zoning Commission for the establishment of a special sign district for the purpose of creating an integrated special sign theme in the area. The Planning and Zoning Commission shall hold a public hearing on such a request. The Commission may then approve signage where the provisions of this Section 5 would otherwise prohibit such signs.

Political Signs - Political Signs are exempted from all requirements contained in this Section 5 for



forty-five (45) days before any Election Day and all such signs must be removed seven (7) days after any Election Day. Successful primary candidates, whose names will appear on the general election ballot, may continue to display their political signs after the primary election, but all such signs must be removed seven (7) days after the general election. No sign shall be placed within the twenty-five (25) foot triangle of land at the corner of any intersection, otherwise known as the sign visibility triangle and no sign shall be attached to any other freestanding sign.

5.G Prohibited and Non-conforming Signs

Prohibited Signs - The Following signs are prohibited:

- Signs which are obscene, hazardous to traffic, imitative of official government signs (i.e. STOP, DANGER, CAUTION, etc.) create a public nuisance, obstruct visibility, or create a hazard to the public are prohibited. Approved signs that later become a hazard or a nuisance shall be removed.
- Portable signs are prohibited except as permitted in the Business section.
- Signs with moving parts, including banners pennants or other devices set in motion by the wind are prohibited except as permitted in Exemptions section.

Non-conforming Signs - The following non-conforming signs are exempt:

- Permanent signs, affixed to the ground or a structure, erected prior to the effective date of this Final CMP that would be in violation of this Section are non-conforming signs that have grandfathered rights. These grandfathered rights become null and void if the sign or the sign structure is destroyed.
- The most obvious Non-conforming signs within the Benson City Limits (as of December 1989) are: all billboards on 4th Street, Ocotillo, and Highway 80, all projecting signs and roof top signs in the B-2 districts that extend above the roof line.

5.H Sign Permits, Fees, and Removal

Building Permits - It shall be unlawful for any person, firm or corporation to erect, re-erect, construct, repair, alter, relocate or maintain within the City of Benson, any sign as defined in this Section 5, except as hereinafter provided, without first obtaining a building permit from the Building Inspector. Building permits shall not be required for:



- Nameplate signs,
- Home occupation signs,
- Real estate, Political, Contractor, Developer signs,
- Non- illuminated wall signs not exceeding fifty (50) square feet,
- (5) Repairs or repainting not in excess of \$200.00, and
- Window signs.

Application for a building permit shall be accompanied by, at a minimum, a site plan, construction plans, and written consent of the landowner, if appropriate.

Permit Revocable - The building official shall have the authority to revoke any permit, which has been granted when he has determined that the sign authorized by the permit has been constructed or is to be maintained in violation of the permit.

Liability - The granting of a building permit shall not be deemed to be a permit for or approval of any violation of this Section 5. The provisions of this Section 5 shall not be construed as relieving or limiting in any way, the responsibility or liability of any person, firm, or corporation, erecting or owning any sign, or resulting from the negligence or willful acts of such person, firm or corporation or its agents, employees or workmen, in the construction, maintenance, repair or removal of any sign erected in accordance with a permit issued hereunder. Nor shall issuance of such permit be construed as imposing upon the City or its officers or employees, any responsibility or liability by reasons of the approval of any signs, material or devices under the provisions of this Section 5.

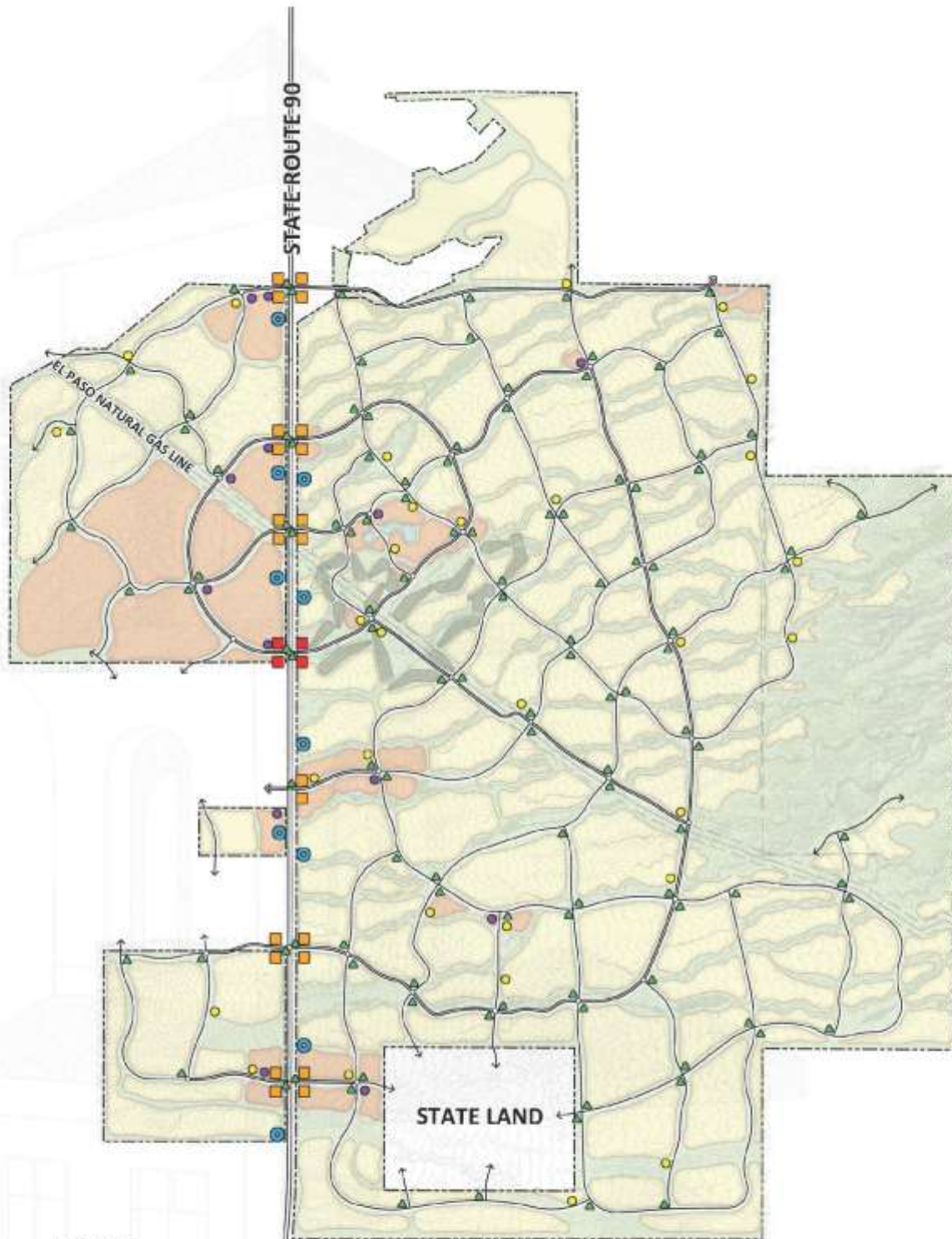
Sign Permit Fees - Sign permit fees are scheduled as follows:

- For non-illuminated wall signs, not exempted above, building permit fee is established at \$15.00.
- For non-illuminated ground signs, constructed of wood and not exceeding a height of twenty (20) feet above grade, the building permit fee is established at \$15.00.
- For all other signs, the building permit fee shall be as established in the Uniform Building Code.

Removal of Signs - Any sign which advertises a business no longer conducted or products no longer sold, at the location of the sign, shall be removed by the owner, agent, or person having the beneficial use of the building or property on which such sign is located within ten (10) days after such business has terminated. The building official is hereby authorized to cause removal of such signs thirty (30) days after written notification is provided to the property owner. All costs associated with such removal will be billed to the property owner(s).







LEGEND

- Main Entry Signage
- Secondary Entry Signage
- Highway Signage
- ▲ Street Identification / Regulatory Signage
- Amenity Identification
- Commercial Icon

Disclaimer: This exhibit has been prepared for general planning and illustrative purposes only and is not to be relied upon for actual dimensions. The elements shown are diagrammatic and shall not be construed as a final representation of engineering design.

NOT TO SCALE



COLLABORATIVE V
DESIGN STUDIO INC.
 7116 EAST 1ST AVE.,
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The Villages at Vigneto
EXHIBIT 14: SIGNAGE MASTER PLAN

6. Outdoor Lighting Regulations

Introduction - Section Seventeen of the City of Benson Zoning Regulations is incorporated as supplemented and modified in this Section 6 of the Final CMP. The Developer intends to submit an outdoor lighting plan for the Project or portions thereof concurrently with the first Planning Unit Plans. If the sign plan varies from Section 6 of this Final CMP, then approval of the Planning & Zoning Commission and City Council may be required.

The following lighting conditions supplement the dark sky provisions as stated in the remainder of Section 6:

- Indoor or outdoor lighting that is 150 watts or less shall be exempt from these provisions.
- Sources of illumination that are directly visible from a public street or residential property shall be minimized to reduce glare.
- Light intensity shall not exceed one foot-candle on any adjacent property.
- All fixtures to be fully shielded. Metal halide and florescent fixtures shall be filtered.
- Mercury vapor fixtures are prohibited and LED fixtures are encouraged.
- Any light fixture shall not exceed the following heights:
 - 30 feet for residential
 - 40 feet for commercial/retail
 - 60 feet for any recreational or public use with the exception of playing fields and arenas

6.A Intent

Dark Skies Protected - It is the intent of this regulation to encourage outdoor lighting practices and lighting systems, which will minimize light pollution, light trespass, and glare thus curtailing the degradation of dark skies and protecting citizens from unwanted lighting by others. Dark skies are a natural resource for humans and animals and as such should be preserved as best as possible. Furthermore, reduction of light pollution by allowing outdoor lights to illuminate only what needs to be lit promotes a more natural environment for people and wildlife of our area, and protects individual privacy by discouraging the intrusion of light trespass, light pollution, and glare.

Energy Conservation - This regulation is also intended to conserve energy and resources and maintain a safe and secure nighttime environment by encouraging efficient lighting systems that optimize visual acuity for safety reasons. Gradual changes from light to dark and dark to light gives the eye time to safely adjust to changing lighting conditions.

Astronomical Observation - It is also recognized that topographic and atmospheric conditions in South-eastern Arizona are unique for optimal astronomical observation and research. As such, observatories have been established in Cochise, Pima, and Graham counties, and the City of Benson area. The provisions herein contained, promote the reduction of light pollution, which interferes with the successful operation of such observatories.

6.B Conformance with Applicable Codes



All outdoor illuminating devices shall be installed in conformance with the provisions of Section 8 of this Final CMP.

6.C Applicability

New Uses, Buildings and Major Additions or Modifications - The requirements of this Section 6 apply to any and all new uses and major and minor additions to land uses, developments, buildings, or structures. If a major addition occurs on a property, the entire property shall comply with the requirements of this Section 6.

Major Additions - For purposes of this section, the following are considered to be major additions:

- Additions of 25 percent or more in terms of additional dwelling units, gross floor area, seating capacity, or parking spaces, either with a single addition or with cumulative additions subsequent to the effective date of this provision.
- A major addition constitutes any single or cumulative modification or replacement of legally installed outdoor lighting fixtures totaling 25 percent or more of the actual lumens for the property. Where existing outdoor lighting is modified or replaced and the resulting lighting fixture has less lumen capacity than the previously existing fixture, the lumen capacity of the modified or replaced fixture shall not be included in the lumen calculations for determining a major addition. The total of non-conforming lighting shall not be increased.

Minor Additions - Additions or modifications greater than 10% but less than 25 percent to existing uses shall require the submission of a complete inventory and site plan detailing all existing and any proposed new outdoor lighting. Any new lighting on the site shall meet the requirements of this Code with regard to shielding and lamp type; the total amount of lighting after the modifications are complete shall not exceed that on the site before the modification, or that permitted by this code, whichever is larger.

Change of Use - Whenever the use of any existing building, structure, or premises is changed to a new use, all outdoor lighting shall be reviewed and brought into compliance with this Code before the new use commences.

Resumption of Use after Abandonment - If a property or use with non- conforming lighting is vacant for more than 6 months as defined in the Definitions section below (See Use, Abandonment of), then all outdoor lighting shall be reviewed and brought into compliance with this Code before the use is resumed.



6.D Lighting Definitions

Unless the context clearly indicates otherwise, certain words and phrases used in this Section 6 of the CMP and Section Seventeen of the City of Benson Zoning Regulations mean the following:

Class 1 Lighting “Color Rendition/Lumen Cap Exemption” - All outdoor lighting used for, but not limited to, outdoor sales or eating areas, entrance canopies on retail buildings, assembly (mechanical) or repair areas, advertising and other signs, recreational facilities, amphitheatres and other similar applications where color rendition is important to preserve the effectiveness of the activity. Designation of lighting as Class 1 requires a finding by the City of Benson of the essential function of color rendition for the application. Lumen Cap Exemptions apply to Outdoor Recreational Facilities and Display Lots.

Examples of lighting that can be used to achieve color rendition, when used in combination with other lamp types, include: Metal Halide, Fluorescent, and Quartz Halogen.

Class 2 Lighting “General Illumination for Safety and Security” - All outdoor lighting used for, but not limited to, illumination for walkways, roadways, equipment yards, parking lots and outdoor security where general illumination for safety or security of the grounds is the primary concern. Twenty-Four (24) hour businesses fall into this class. Safety and Security lighting is exempt from all curfew requirements.

Class 3 Lighting “Decorative Lighting” - Any outdoor lighting used for decorative effects including, but not limited to, architectural illumination, flag and monument lighting, and illumination of landscaping.

General Lighting - Lighting used for general illumination that does not fall under Classes 1-3.

Color Rendition - The ability of a light source to faithfully reproduce the colors seen in an object.

Development Project - Any residential, commercial, industrial or mixed use subdivision plan or development plan that is submitted to the City of Benson for approval or for permit.

Direct Illumination - Illumination resulting from light emitted directly from a luminaire, not light diffused through translucent signs or reflected from other surfaces such as the ground or building faces.

Display Lot or Area - Outdoor areas where active nighttime sales activity is the primary business function, and where accurate color perception by customers is required. To qualify as a display lot, one of the following specific uses must occur: automobile sales, assembly lots, swap meets, airport and automobile fueling areas. Uses not on this list must be approved as a display lot use by the City of Benson.



High Intensity Discharge (HID) - In a discharge lamp, the emitted energy (light) is produced by the passage of an electric current through a gas. High-intensity discharge lamps include: mercury, metal halide, low-pressure sodium, fluorescent and high pressure sodium. Some such lamps have internal coatings to convert some of the ultraviolet energy emitted by the gas discharge into visual output.

Glare - The sensation produced by a bright light source within the visual field that is sufficiently brighter than the level to which the eyes are adjusted, causing discomfort and/or loss in visual performance visibility.

Illuminance - The amount of light falling onto a surface area, measured in foot-candles (lumens per square foot) or lux (lumens per square meter). For conversion purposes, 1 foot-candle (fc) is equal to 10.76 lux (lx).

Installed - The attachment, or assembly fixed in place, whether or not connected to a power source, of any outdoor light fixture.

Fully Shielded, Full Cut Off (FCO) Light Fixture - A light fixture constructed, installed and maintained in such a manner that all light emitted by the fixture, either directly from the lamp or indirectly by reflection or refraction from any part of the fixture, is projected below a horizontal plane running through the lowest part of the fixture.

Light Trespass - Stray electric light falling where it is not wanted or needed. Direct light that has its source on one site, and directly illuminates areas beyond the property boundaries. Light trespass is typically produced by stray light from unshielded or misdirected outdoor lighting, and includes glare from direct viewing, as well as “off-site spill” light.

Lighting Areas - All lighting areas discussed below shall be identified based on the land use designations and categories found in Section 7 of this Final CMP. Lighting Areas are primarily used to define advertising sign lighting curfews and lumen caps. These lighting areas are as follows:

- Lighting Area E3 is an urban area with primary land uses for commercial, business, industrial activity, apartments, surrounded by suburban residential and is more specifically defined as the Mixed Use land Designation and the Developed Open Space land use category from the Open Space designation in Section 7 of this Final CMP.
- Lighting Area E2 is defined, as the balance of the City of Benson not listed as Lighting Areas E3 or E1.
- Lighting Area E1 is an intrinsically dark area used for astronomical observations at established professional facilities, e.g. Vega Bray. Area E1 is defined as the area 1.5 mile radius from the center point of these facilities as approved by the City of Benson.
- A property located in more than one of the Lighting Areas described under the above shall be considered to be only in the more restrictive Lighting Area.

Lumen - The unit used to measure the actual amount of light produced by a lamp.

Luminaire - The complete lighting assembly, less the support assembly. Multiple unshielded or full cutoff lamps on a single pole or standard shall be considered as a single unit, for purposes of



determining total light output from a luminaire lighting assembly. Two or more units with lamps less than 3 feet apart shall be considered a single luminaire.

Multi-class Lighting - Any outdoor lighting used for more than one purpose, such as security and decoration, such that its use falls under the definition of more than one class, as defined for Class 1, and 2 Lighting.

Net Acreage - The remaining ground area after deleting all portions for proposed and existing public streets within a development, parcel, or subdivision.

Off-Site Spill - Any combination of glare, up-light (sky glow) and/or light trespass applicable, but not limited to, structure exterior lighting, roadway/street lighting, pedestrian malls, parks, recreational facilities, outdoor display lots, parking lots, service stations, convenience stores, billboards and signage.

Opaque - Opaque means that the material shall not transmit visible light.

Outdoor Light Fixture - An outdoor illuminating device, outdoor lighting or reflective surface, lamp or similar device, permanently installed or portable, used for illumination or advertisement. Such devices shall include, but are not limited to:

- street lighting;
- parking lot lighting;
- building and structural lighting;
- landscape lighting;
- recreational lighting;
- billboards and other signs (advertising or otherwise);
- product display area lighting;
- building overhangs and open canopies;
- security lighting;
- searchlight, spotlight, flood lights, and laser lights.

Outdoor Light Output, Total - The total amount of light, measured in lumens, from all outdoor light fixture lamps, is calculated as follows:

- For lamp types that vary in light output as they age (such as fluorescent and high intensity discharge lamps), the mean lumen output, as defined by the lamp manufacturer, shall be the lumen value used.
- The total light output of each outdoor light fixture shall be based on the largest lamp that the outdoor light fixture is rated to accommodate. For the purpose of compliance with this section, the largest lamp rating for fluorescent and high intensity discharge fixtures shall be based on the installed ballast rating.



Outdoor Recreation Facility - An area designed for active recreation, whether publicly or privately owned, including, but not limited to: baseball, soccer, football, golf, tennis, swimming pools, and race tracks of any sort.

Person - Any individual, tenant, lessee, owner, or any commercial entity including but not limited to: firm, business, partnership, joint venture or corporation.

Sky Glow - The undesirable and unnecessary emission of light ray, directly or indirectly, into the night sky.

Temporary Lighting - Lighting which does not conform to the provisions of this Final CMP and which will not be used for more than one thirty (30) day period within a calendar year, with one thirty (30) day extension. Temporary lighting is intended for uses that by their nature are of limited duration, for example: holiday decorations, civic events, or construction projects.

Use, Abandonment of - The relinquishment of a property, or the cessation of a use or activity by the owner or tenant for a period of six months, excluding temporary or short term interruptions for the purpose of remodeling, maintaining, or otherwise improving or rearranging a facility. A use shall be deemed abandoned when such use is suspended as evidenced by the cessation of activities or conditions that constitute the principal use of the property.

Curfew - A time established for listed lighting systems to be automatically extinguished.

6.E Total Outdoor Light Output and Shielding Requirements

The table in this section gives requirements of the total light output permitted per acre for the different lighting areas and the fixture shielding requirements. These requirements shall be met for all lighting installations subject to this code. SEE TABLE 6.E, (Maximum Total Outdoor Light Output Requirements).

Total Outdoor Light Output - Total outdoor light output shall not exceed the lumen limits given in Table 6.E. In the table, Total means the sum of shielded and unshielded light.

For determining compliance with Section 6.E, the total lumens is the sum of the following:

- One hundred percent of the lumens from outdoor light fixtures installed on grade, on poles, and installed on the top or sides of buildings or other structures.
- Fifty percent of the lumens from underwater light fixtures unless the fixture is aimed at an angle of less than 45 degrees above the horizontal, in which case the calculated lumens is calculated at 10 percent of the rated lumens.

Outdoor lighting fixtures shall not be counted in determining the total light output when they are full cut-off light fixtures installed under canopies, building overhangs, or roof eaves.



Light Shielding - All light fixtures that are required to be shielded shall be installed in such a manner that the shielding is effective as described in Lighting Definitions Section (See Fully Shielded, Full Cut Off (FCO)).

In the shielding requirements of Section 6.E, all light fixtures on the residential side of commercial property adjacent to residential property shall be full cutoff and shall be a maximum of 10 feet above grade at the property line and no higher than a line rising 20 degrees above the 10 feet until 100 feet from the property line. All outdoor lighting within one mounting height, (mounting height = the distance from grade to the top of the lighting fixture), of residential areas shall have internal house-side shields. In addition, all residential and commercial luminaries shall be full cutoff within 25 feet of adjacent residential property lines.

Multi-class lighting must conform to the shielding and timing restrictions, if any, which apply to the most restrictive class.

If the unshielded lumens requirements of Table 6.E cannot be met, due to a lack of available appropriately shielded lighting fixtures, applicants may apply for a waiver for a maximum of one 60-watt lighting fixture and four 40-watt lighting fixtures per residence.

Table 6.E Maximum Total Outdoor Light Output Requirements			
<u>Lumen Caps: Mean Lumens Per Net Acre (Lighting Definitions – See Multi-Class Lighting)</u>			
<u>Note: 1,700 lumens is the approximate equivalent of a 100 watt incandescent bulb</u>			
<u>(Exact Lumen equivalency depends on type of lamp and manufacturer)</u>			
	<u>Lighting Area</u> as defined in Lighting Definitions		
	E3 Mixed Use Land Use Designation and Developed Open Space Land Use Category of the Open Space Land Use Designation	E2 Natural Open Space Land Use Category of the Open Space Land Use Designation	E1 Intrinsically dark areas used for astronomical observation 1.5 mile radius around Vega Bray observatory
Commercial and Industrial - Option 1 ^{1, 2}			
All lighting must be Full Cut Off	300,000	65,000	25,000
Commercial and Industrial - Option 2 ^{1, 2} Full Cut Off for most Lighting			
Total (Full Cut Off plus unshielded)	200,000	50,000	12,500



Limit on unshielded component	12,000	6,000	3,000
All Residential Zoning ³			
Total (Full Cut Off plus unshielded)	55,000	24,000	12,000
Limit on unshielded component	12,000	6,000	3,000

Notes to Table 6.E:

1. Commercial and Industrial Use – choose Option 1 or 2 for the entire project.
2. This refers to all land-use zoning classifications for multiple family uses, commercial, and industrial sites.
3. This refers to all residential land-use zoning, including all densities and types of housing, such as single family detached and duplexes.
4. In addition to the lumen caps given in the table above, the maximum illumination level under any canopy in Lighting Area E3 shall not exceed 110 lumens per square foot, in Area E2 shall not exceed 55 lumens per square foot and in Area E1 shall not exceed 30 lumens per square foot.
5. FCO flood or spot lamps shall be aimed no higher than 45 degrees to the horizontal (half-way between straight down and straight to the side) when the source is visible from any adjacent residential property or roadway.
6. Seasonal decorations using unshielded low-wattage incandescent lamps (not exceeding 7 watts) shall be allowed from Thanksgiving to January 15th.
7. All Class 1 & 3 lighting shall be extinguished between 11:00 p.m. (or when the business closes, whichever is later) and sunrise.
8. Commercial use unshielded fixtures (not FCO) shall not exceed 1,700 lumens each (equivalent to a 100 watt incandescent lamp).
9. For residential uses, any lamp type with output of 1,000 lumens or more shall be fully shielded.
10. Mean lumens- after 40% of the rated hours of a light fixture have burned out.

6.F Outdoor Advertising Signs

External Illumination - External illumination for on-site signs shall conform to all provisions of this Code. In particular, such lighting shall be treated as Class 1 lighting and shall conform to the lamp source, shielding restrictions, and lumen caps of Section 6.E.

Electrical Illumination Outdoor - Electrical illumination of outdoor advertising off-site signs (billboards) is prohibited, except that the use of lighting fixtures legally installed in Areas E2 and E3 prior to the effective date of this code may continue, provided such fixtures are mounted on the top of the sign structure, shall not be illuminated between the hours 11:00 p.m. and sunrise, and comply with all other provisions of the code.

Internally Illuminated Outdoor - Internally illuminated signs: Outdoor internally illuminated signs must be constructed with an opaque or dark-colored background and translucent text and symbols. (Neon signs shall be treated as internally illuminated signs for the purpose of this Code. Neon lighting extending beyond the area considered to be the sign area, shall be considered Class 3 decorative lighting). Internally illuminated signs with an opaque or dark-colored background and lighter text and symbols are not subject to the curfew.



Outdoor Internally Illuminated - Outdoor internally-illuminated advertising signs shall not be counted towards the lumen cap and shielding requirements described in Sections 6.E

6.G Illuminated Advertising Sign Curfews

Illumination for all advertising signs, both externally-illuminated and internally-illuminated, shall be turned off at the curfew times listed in Table 6.G, or when the business activities cease, whichever is later. The means of controlling the specific “off” curfew shall be by a 24 hour timing devices that includes stand-by power to maintain the time and program for a minimum of 6 (six) hours.

Lighting Area	E3 Mixed Use Land Use Designation and Developed Open Space Land Use Category of the Open Space Land Use Designation	E2 Natural Open Space Land Use Category of the Open Space Land Use Designation	E1 Intrinsically dark areas used for astronomical observation 1.5 mile radius around Vega Bray observatory
Commercial and Industrial Zoning or *Land Use	12 a.m.	11 p.m.	not allowed
All Residential Zoning or *Land Use	11 p.m.	10 p.m.	not allowed

Note to Table 6.G: *Land Use refers to the predominant use of land within 300 meters (or 1000 feet) of the parcel on which the sign is located.

6.H Special Uses - Sports Facility and Display Lot Curfews

Recreational Facilities - All site lighting not directly associated with the athletic playing areas shall conform to the lighting standards described in this section including, but not limited to, the lamp type and shielding requirements of Section 6.E and the lumens per acre limits Table 6.E.

Lighting for athletic fields, courts or tracks shall be considered Class 1 (Color Rendition), and shall be exempt from the lumens per acre limits of Table 6.E. All such lighting shall utilize full cutoff luminaries that are installed in a fashion that maintains the full cutoff characteristics unless certified by a registered engineer that such shielding is impractical. Every such lighting system design shall be certified by a registered engineer as conforming to all applicable restrictions of



this Section. Where full cutoff fixtures are not utilized, acceptable luminaries shall include those which:

- Are provided with internal and/or external glare control louvers and installed so as to limit direct upward light to less than 5 percent of the total lumens exiting from the installed fixtures and minimize offsite light trespass, and;
- Are installed and maintained with minimum aiming angles of 25 degrees downward from the horizontal. Said aiming angle shall be measured from the axis of the luminaries maximum beam candlepower as certified by independent testing agency.

All events shall be scheduled so as to complete all activity before the curfew listed in Section 6.H. Illumination of the playing field, court or track shall be permitted after the curfew only to conclude a scheduled event that was unable to be completed before the curfew due to unusual circumstances. No recreational lighting is permitted in area E1. The means of controlling the specific “off” curfew shall be by a 24 hour timing device that includes stand-by power to maintain the time and program for a minimum of 6 (six) hours. Timing devices for Recreational Facilities may include a manual override setting which returns to the established program within 2 (two) hours.

Table 6.H Sports Facility and Display Lot Curfews		
Lighting Area		
E3 Mixed Use Land Use Designation and Developed Open Space Land Use Category of the Open Space Land Use Designation	E2 Natural Open Space Land Use Category of the Open Space Land Use Designation	E1 Intrinsically dark areas used for astronomical observation 1.5 mile radius around Vega Bray observatory
12 a.m.	11 p.m.	Not allowed



Outdoor Display Lots - Businesses where the primary function is: automobile sales, assembly lots, swap meets, airport and automobile fueling areas. Uses not on this list must be approved as a display lot use by the City of Benson.

All site lighting not directly associated with the display areas shall conform to the lighting standards described in this Section, including, but not limited to, the lamp type and shielding requirements of Section 6.E and the lumens per acre limits of Table 6.E.

Class 1 Display Lots - Lighting for display lots shall be considered Class 1 (Color Rendition) and is exempt from the lumens per acre limits of TABLE 6.E. All such lighting shall utilize full cutoff luminaries that are installed in a fashion that maintains the full cutoff characteristics. A registered lighting or electrical engineer shall certify that every lighting system design conforms to all applicable restrictions of this section.

Class 2 Display Lot - Security and safety lighting is exempt from the turn-off requirements of Table

6.1 General Requirements

Light Trespass and Glare - All fixtures and lamps shall be located, installed, directed, shielded, and maintained to avoid light trespass and to minimize direct light and /or glare on neighboring properties and roadways.

For a receiving residential site, the level of light trespass shall not exceed 0.2 foot-candles as measured with the meter's sensor perpendicular to the light source at a height of five feet above the ground and located five feet inside the receiving property line. For a receiving non-residential site, the level of light trespass shall not exceed 0.5 foot-candles under the same parameters.

Residential Sites - The overall height of lighting fixtures (including the base) shall not exceed 35 feet above ground level, unless otherwise allowed within this the Lighting Standards. Exceptions for height of lighting may be approved after application to Community Development Director, and such approval shall not be unreasonably with-held.

Non-Residential Sites - Except as provided herein for specific uses, the overall height of lighting fixtures (including the base) on all non-residential sites shall not exceed 35 feet above ground level. Unless otherwise allowed within this the Lighting Standards. Exceptions for height of lighting may be approved after application to Community Development Director, and such approval shall not be unreasonably with-held.



Lighting Types and General Shielding Requirements - All light fixtures required to be full cut off (FCO) shall be installed and maintained in a fashion that maintains the full cut off characteristics.

- Low Pressure Sodium lamps - Are the preferred lamp type for minimizing adverse effects on astronomical observations.
- Wall-Pack Type Lighting Fixtures - Shall be fully shielded.
- Twenty-four (24) Hour Commercial - Properties must be Full Cut Off.

Shielding Requirements for Residential Uses - Lighting for multiple household dwellings (other than a duplex) is not considered residential and must use standards for Class 1 or Class 2 lighting. For residential uses, any lamp type with output of 1,000 lumens or more shall be fully shielded.

6.J Submission of Plans and Evidence of Compliance with this Code

Submission Contents - The applicant for any permit required by any provision of the laws of this jurisdiction in connection with proposed work involving outdoor lighting fixtures shall submit (as part of the application for permit) evidence that the proposed work will comply with this Code.

Upon application for the required permit, the submission shall contain but shall not necessarily be limited to the following, all or part of which may be part of, or in addition to, the information required elsewhere in the laws of this jurisdiction.

Requirements from this section shall include but are not limited to the following:

1. All submission packets must specify which Outdoor Lighting Option (Table 6.E) will be adhered to for the entire project.
2. Plans indicating the location on the premises, and the type of illuminating devices, fixtures, lamps, supports, reflectors, and other devices;
3. Description of the illuminating devices, fixtures, lamps, supports, reflectors, and other devices may include, but is not limited to, catalog cuts by manufacturers and drawings (including sections where required);
4. Photometric data, furnished by the manufacturer, or similar data showing the angle of cutoff or light emissions. Photometric data need not be submitted when the full cutoff performance of the fixture is obvious to the reviewing official.
5. When a submittal includes a statement by a registered design professional where the existing site lighting is being modified less than 10%, it shall not be necessary to comply with paragraph 7 below.
6. When submittal includes a statement by a registered design professional that the design is in accordance with this code, the requirements of sub-paragraphs 3 and 4 above shall not apply.



7. A schedule on the plans to confirm compliance with the Lumen Cap per Table 6.E, which includes the following information:
 - Each exterior luminaries type with the mean lumens for that type, the quantity of each type and whether the luminaries are FCO or unshielded.
 - The total of FCO and unshielded mean lumens for the parcel.
 - A statement of the Lighting Area, the size of the permitted parcel, and the maximum allowed FCO and unshielded mean lumens (Table 6.E)

Additional Submission - The above required plans, descriptions and data shall be sufficiently complete to enable the plans examiner to readily determine whether compliance with the requirements of this Code will be secured. If such plans, descriptions and data cannot enable this ready determination, by reason of the nature or configuration of the devices, fixtures, or lamps proposed, the applicant must submit any additional certified reports of tests necessary to prove compliance. These tests shall have been performed and certified by a recognized testing laboratory.

Subdivision Plat Certification - If any subdivision proposes to have installed street or other common or public area outdoor lighting, the final plat shall contain a statement certifying that the applicable provisions of this Code will be adhered to.

Lamp or Fixture Substitution - Should any outdoor light fixture or the type of light source therein be changed after the permit has been issued, a change request must be submitted to the building official for his/her approval, together with adequate information to assure compliance with this code, and the change request must be received prior to substitution.

6.K Approved Materials and Methods of Construction or Installation/ Operation

The provisions of this Code are not intended to prevent the use of any design, material, or method of installation or operation prescribed by this Code.

6.L Prohibitions

Mercury Vapor Lamps - The installation, sale, offer for sale, lease or purchase of any mercury vapor lamp for use as outdoor lighting is prohibited. The use of legal, non-conforming mercury vapor light fixtures (installed prior to 1983) is prohibited after January 1, 2011, as per ARS 49-1104.

Certain Other Fixtures and Lamps - The installation, sale, offering for sale, lease or purchase of any low pressure sodium, high pressure sodium, metal halide, fluorescent, quartz or incandescent outdoor lighting fixture or lamp the use of which does not comply with Table 6.E is prohibited.



Laser Source Light - The use of laser source light or any similar high intensity light for outdoor advertising or entertainment, when projected above the horizontal is prohibited.

Searchlights - The operation of searchlights for advertising purposes is prohibited.

Bottom Mounted Lighting - Bottom-mounted outdoor advertising sign lighting is prohibited.

6.M Temporary Exemption

Request; Renewal; Information Required - Any person may submit a written request for a temporary exemption. A temporary exemption shall contain the following information:

- Specific exemption or exemptions requested;
- Type and use of outdoor light fixture involved;
- Duration of time of the requested exemption;
- Type of lamp and lamp lumens;
- Total wattage of lamp or lamps and number of lamps to be used;
- Proposed location on premises of the outdoor light fixture(s);
- Previous temporary exemptions, if any, and addresses of premises there under;
- Physical size of outdoor light fixture(s) and type of shielding provided;
- Such other data and information as may be required by the building official.

Approval; Duration - The City of Benson shall have five business days from the date of submission of the request for temporary exemption to act, in writing, on the request. If approved, the exemption shall be valid for not more than thirty days from the date of issuance of the approval. The approval shall be renewable at the discretion of the building official upon a consideration of all the circumstances. Each such renewed exemption shall be valid for not more than thirty additional days.

Disapproval; Appeal - If the request for temporary exemption is disapproved, the person making the request will have the appeal rights provided in Section 6.N

Exemptions - Neon lighting is exempt from the requirements of Section 6.E when used for sign lighting, but not for other uses. Natural gas lighting is exempt from all requirements of this code.



6.N Alternate Materials and Methods of Construction, Installation/Operation and Appeals

The provisions of this Code are not intended to prevent the use of any design, materials or method of installation or operation not specifically prescribed by this Code, provided any such alternate has been approved. The building official may approve any such proposed alternate provided he finds that it:

- Provides at least approximate equivalence to the applicable specific requirements of this Code; and
- is otherwise satisfactory or complies with the intent of this Code; and
- has been designed or approved by a registered lighting or electrical engineer and is supported by calculations showing that the design submitted meets the intent of the code. This section shall not have the effect of waiving the lumen caps and shielding requirements of Section 6.E.

Appeals - Any person substantially aggrieved by any decision of the building official/planning director made in administration of this Code has the right and responsibilities of appeal to the City of Benson of this jurisdiction.

New Use	Complete compliance with Code for entire structure or property and a site plan showing existing and proposed lighting.
Addition of more than 25 percent of additional dwelling units, gross floor area, seating capacity or parking spaces.	Complete compliance with Code for entire structure or property and a site plan showing existing and proposed lighting.
Addition of more than 10 percent, but less than 25 percent additional dwelling units, gross floor area, seating capacity or parking spaces.	Complete lighting plan submission to City showing existing and proposed lighting with all new construction to be built in compliance with this Code.
Addition of less than 10 percent additional dwelling units, gross floor area, seating capacity or parking spaces.	Site plan showing proposing lighting and compliance with this Code for proposed changes.

6.O Enforcement and Penalty

Violations - Violations not exclusive; each day a separate violation.

- Violations of this article are in addition to any other violation enumerated within the City ordinances or this Final CMP and in no way limit the penalties, actions, or abatement procedures which may be taken by the City for any violation of this article which is also a violation of any other ordinance or code provision of the City or Arizona Revised Statutes.



- Each day any violation of any provision of this article or the failure to perform any act or duty required by this article continues may constitute a separate offense.

Enforcement - Enforcement jurisdiction of city.

- Jurisdiction of all proceedings to enforce the provisions of this article, whether civil or criminal, shall be in the City of Benson Magistrate Court.

Civil violations - Citation and enforcement procedure

- Civil Citation - Authority to Issue: The Planning and Zoning Coordinator or his designee may issue a civil citation pursuant to this article.

Procedure for Civil Violation - Commencement of Action: A civil violation may be commenced by issuance of a citation in the City of Benson Magistrate Court by the Planning and Zoning Coordinator or his designee Appearance by Defendant:

- The defendant shall, within ten (10) days of the issuance of the complaint, appear in person or through his or her attorney before the City Magistrate and shall either admit or deny the allegations contained in the complaint. If the defendant admits the allegation, the City Magistrate may enter judgment against the defendant and impose a civil sanction for the violation. If the defendant denies the allegations contained in the citation, the City Magistrate shall set the matter for hearing.

Default Judgment - If a person served with a citation fails to appear on or before the time directed to appear or at the time set for hearing by the City Magistrate, the allegations in the citation shall be deemed admitted and the City Magistrate may enter judgment for the City and impose a civil sanction.

Civil/criminal penalties; restitution - Civil penalties. Upon finding a person responsible for a civil violation of this article, the City Magistrate may impose a civil sanction of not less than \$50.00 nor more than \$250.00. The City Magistrate may suspend the imposition of the civil sanction if at the time of sentencing, he or she finds by a preponderance of the evidence that the violation the defendant was found responsible for has now been corrected, and that the defendant is now in compliance with this article. In that event, the City Magistrate may suspend all or part of the fine.



7. Land Use and Development Standards

7.A Land Use

7.A.i Land Use General Provisions

Project Phasing - Development of the Project will occur over an estimated twenty (20) years, as dictated by market conditions, and is contemplated to progress in phases designated as Planning Units as described in Section 3 of this CMP. The numbering of the Planning Units depicted on the Planning Unit Map is for reference only and does not necessarily suggest any particular sequence of development. Development may occur in multiple contiguous or non-contiguous portions of each Planning Unit concurrently.

The Land Use Map - Illustrates the general pattern of development anticipated for the Project (See Exhibit 15: Land Use Final Development Plan). The Land Use Map is conceptual in nature, particularly with regard to the location of the Town Center, recreational amenities, such as the golf course and recreation centers, public service centers, and purely non-residential or mixed residential/commercial uses. The Natural Open Space is generally located, but may shift as more detailed site analysis and engineering for the Project proceeds.

The Land Use Budget - (See Exhibit 16: Land Use Budget (Acreage) establishes the anticipated land use allocations, by acreage and density range, for the Project. These allocations may be adjusted by the Developer, without the need for an amendment to this Final CMP, to respond to market conditions.

The land use allocations established by the Land Use Budget are subject to the following parameters:

- In no event will the Project contain less than twenty percent (20%) usable open space (by gross acreage);
- No more than twenty-eight thousand (28,000) dwelling units may be located within Vigneto property (“Dwelling Unit Cap”);
- The Developer may increase the Project’s developable acres, provided the Dwelling Unit Cap is not exceeded;
- The **gross** density for the Project will not exceed 2.3 dwelling units/acre;
- The Developer will, with the submittal of each Planning Unit Plan, final plat and site plan, track the number of dwelling units associated with such final plat or site plan and provide a cumulative total to the Planning Director for purposes of demonstrating compliance with the Development Unit Cap.



7.A.ii CMP Prohibited Uses

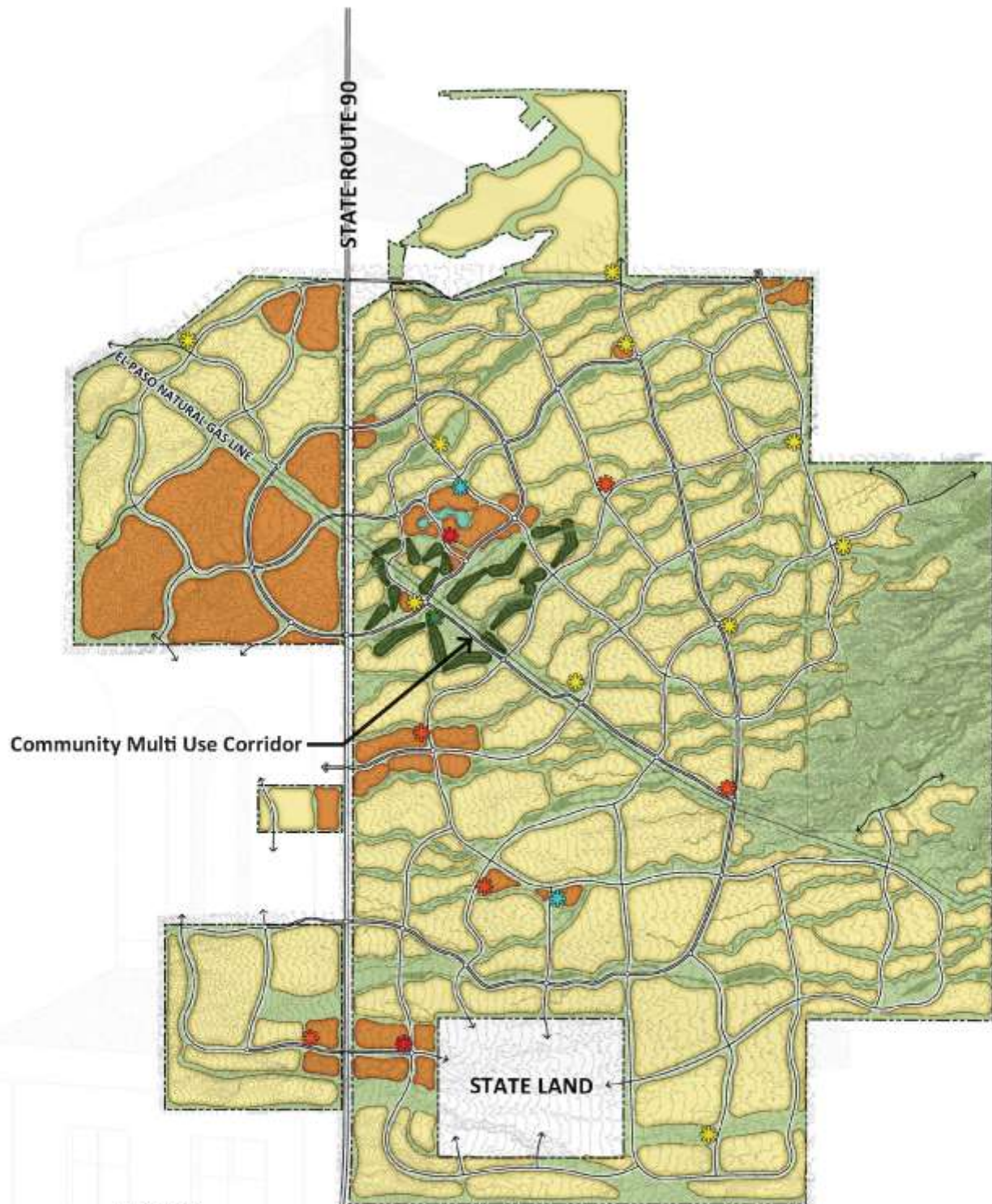
The following uses are prohibited within Vigneto:

- Automobile Graveyard
- Feedlot
- Adult Uses
- Fertilizer Plant
- Junkyard
- Manufactured Home Park
- Mobile Home Park

7.A.iii CMP General Permitted Uses

This Final CMP describes two major land use designations for the Project from the General Development Plan: Mixed Use and Open Space. Mixed Use is the designation for most of the area within the Project and provides the opportunity for a wide variety of land uses. This variety includes: Residential, Mixed Residential/Commercial, Commercial, Light Industrial, Business Park, Resort, Civic Facilities, and Recreational Facilities. All categories may be utilized together or by individually anywhere in a Mixed Use designation area. Open Space, which is the General Plan designation for the remainder of the Project, includes Natural Open Space and Developed Open Space (some of which may be included in a Mixed Use area).





LEGEND

- | | |
|-------------|---|
| Residential | Information Center |
| Mixed Use | Golf Club House |
| Golf | Recreation & Amenity Center |
| Open Space | Recreation & Amenity Center - Satellite |
| | Public Services |

Disclaimer: This exhibit has been prepared for general planning and illustrative purposes only and is not to be relied upon for actual dimensions. The elements shown are diagrammatic and shall not be construed as a final representation of engineering design.



NOT TO SCALE



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The Villages at Vigneto

EXHIBIT 15: LAND USE FINAL DEVELOPMENT PLAN

EXHIBIT 16 – Land Use Budget (Acreage)

Vigneto - Land Use Budget – Acreage & Density Forecast

Designation	Density	Dwellings	Percent	Acres
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Mixed Use Category		28,000	75.8%	9,217
Residential	3.71	26,225		7,078
Low Density	1.0 - 2.0	1,867		1556
Low/Medium Density	2.0 - 3.5	6,544		2706
Medium Density	3.5 - 6.0	7,139		1451
Medium/High Density	6.0 - 10.0	8,838		1219
High Density	10.0 - 20.0	1,838		147
Mixed Res / Commercial	4.02	1,775		441
Commercial				156
Medium Density	3.5 - 6.0	800		160
Medium/High Density	6.0 - 10.0	975		125
Commercial				271
Light Industrial				52
Business Park				65
Resort				220
Civic Facilities				892
Recreational Facilities				46
Schools				152

Open Space Category		20% Min	24.2%	2,950
Natural Open Space				1600
Developed Open Space				400
Golf				570
Agri-Business				120
Trail Systems				260

Total Land Use	2.3 du/ac	28,000 Max	100%	12,167
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Designation	Density	Dwellings	Percent	Acres
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Exhibit 16 - Land Use Budget (Acreage)

The Land Use Budget - will be updated and submitted to the Development Director with the submittal of each PUP to reflect the current projected acreages and density for the CMP. The density within the CMP will in no event exceed 28,000 units unless approved as a major amendment by City Council. The Open Space of the Final CMP will not be less than 20% for the entire property within the Final CMP. Additional property may be added to the CMP and approved by the Development Director so long as the density does not exceed 28,000 units.



7.B Land Use Designations

7.B.i Mixed Use

7.B.i.a Residential - The Residential land use category of the Mixed Use designation provides a diverse choice of residential housing opportunities for the Development. The final configuration and mix of age-targeted and traditional buyers will be determined by market conditions at each Planning Unit phase.

In order to achieve a diversity of housing opportunities, as well as provide the necessary amenities and social opportunities to achieve El Dorado's vision, the permitted uses will conform to the General Development Plan and Section Three A of the City of Benson Zoning Regulations as follows.

Uses permitted within all residential areas designated as Residential in the Land Use Budget include:

- Single Family Detached ("SFD") 0-3 du/ac
- Single Family Detached ("SFD") 2-6 du/ac
- Detached or Attached 4-10 du/ac
- Attached Residential 8-16 du/ac
- Attached Residential 12-24 du/ac
- Public/private schools
- Public/private day care/preschool
- Public/private golf courses and related facilities:
- Clubhouses/restaurants
- Locker rooms
- Pro shops
- Cart storage facilities
- Driving ranges
- Tennis courts
- Health clubs/spas
- Recreational complexes/ centers, not associated with a golf course
- Churches and other houses of worship
- Neighborhood commercial area under 15 acres
- Urban agriculture/vineyard/winery
- Utility structures, including substations, wastewater facilities, and water systems
- Other uses as reviewed and approved by the City of Benson Planning Commission and City Council at a future time

As shown in the development standards in this Section 7, lot sizes for residences will range from 2,240 square feet ("sf") to 1+ acre; the acreage saved by reducing the minimum lot size is incorporated into larger recreational areas/open space.



Neighborhood Commercial - Uses permitted in Vigneto neighborhood commercial areas include:

- Retail sales
- Bars and restaurants
- Resort
- Hotel/motel
- Banks and financial institutions
- Day care facilities
- Business, professional, or government office
- Pharmacy with drive-through
- Grocery stores
- Barber or beauty salon
- Dry cleaning establishments and laundromats
- Furniture and appliance repair
- Health club
- Entertainment establishments including electronic game centers, arcades, ice rinks, pool halls, performing art centers and theaters
- Automobile service stations
- Convenience stores
- Car wash (hand or automatic)
- Mini-storage facilities
- Urban Agriculture/Vineyard/Winery
- Utility structures, including substations, wastewater facilities, and water systems
- Other compatible uses as reviewed and approved by the Planning Director

7.B.i.b Mixed Residential / Commercial - The Mixed Residential/Commercial land use category of the Mixed Use designation incorporates both commercial and mixed-use land uses within Vigneto. This category creates a complete and healthy community by providing opportunities for residents to live/work/play/shop within their neighborhood and keeps a majority of the traffic generated by the Development within Vigneto, thereby minimizing the Project's impact on the surrounding region. The following are possible uses within the mixed residential/commercial areas of the Project. Dwelling units located in the Mixed Residential/ Commercial land use category are included in the "Residential" category of the Land Use Budget and count toward the Dwelling Unit Cap.



Illustration 7 – Mixed Residential/Commercial Development

Uses permitted in Vigneto mixed residential/commercial areas include:



- Retail sales
- Bars and restaurants
- Resort
- Hotel/motel, RV park
- Banks and financial institutions
- Day care facilities
- Business, professional, or government office
- Medical centers/hospitals
- Residential
- Pharmacy with drive-through
- Grocery stores
- Barber or beauty salon
- Dry cleaner
- Furniture and appliance repair
- Health club
- Entertainment establishments including electronic game centers, arcades, ice rinks, pool halls, bowling alleys, performing art centers, and theaters
- Automobile service stations
- Convenience stores
- Business services, including advertising services, consumer and mercantile credit reporting services, adjustment and collection services, duplicating, mailing, and stenographic services, dwelling and other building services, new syndicate services, employment services, and auto washing services
- Repair services (electrical, radio and television, watch, clock, jewelry, upholstery and furniture repair, armature rewinding services, and similar light duty maintenance)
- Mini-storage facilities
- Urban agriculture/vineyard/winery (Reference Illustration 8)
- Temporary and/or ongoing event zones, where such events may include, but are not limited to, art, music, food, and wine festivals/shows/concerts, outdoor markets, and other pedestrian oriented social gathering areas where food and beverage, entertainment, and shopping opportunities are permitted
- Public/private schools
- Post-secondary educational institutions
- Utility structures, including substations, wastewater facilities, and water systems
- Other compatible uses as reviewed and approved by the Planning Director





Illustration 8 – Urban agriculture/ vineyard

7.B.i.c Commercial - The Commercial land use category of the Mixed Use designation provides the same permitted uses as Mixed Residential/Commercial while incorporating office space, medical/hospital development along with the additional permitted uses listed below. It will generally be larger than a 15-acre neighborhood commercial center and makes provisions for commercial uses and services that are needed to serve the local population and persons traveling through Vigneto. Uses permitted in this land use category will be located along major streets to provide convenient access. Permitted uses are required to provide off-street parking and loading and unloading facilities in order to expedite traffic movement on adjoining streets. Permitted uses include those listed in the Mixed Residential/Commercial category, as well as the following:

- Professional Offices
- Medical/Hospital
- Funeral and crematory services
- Wholesale trade, including motor vehicles and automotive equipment, drugs, chemicals, and allied products, dry goods and apparel, groceries and related products, electric goods, hardware, plumbing, heating equipment and supplies, machinery and other wholesale trade

7.B.i.d Light Industrial - The Light Industrial land use category of the Mixed Use designation permits those uses included in the commercial category, as well as flex space. Flex space provides a configuration allowing a flexible amount of office, commercial, showroom or manufacturing space in combination with warehouse distribution. Permitted flex space uses include office/warehouse; commercial/warehouse; showroom/warehouse/ and commercial/retail showroom. In addition, the following uses are permitted in the Light Industrial category:

- Manufacturing of apparel and other finished products made from fabrics, leather and similar materials.
- Manufacturing of furniture and fixtures.
- Printing, publishing, and allied industries.
- Manufacturing and assembly of professional scientific, controlling, and electronic instruments; photographic and optical goods, watches, and clocks.



- Manufacturing of jewelry, silverware, and plated ware, musical instruments and parts; toys, amusement, sporting and athletic goods; pens, pencils, and other office and artist materials; novelties, notions and tobacco.
- Motion picture production.
- Motor vehicle transportation facilities and services including bus passenger terminals, bus garaging and equipment maintenance, motor freight garaging and equipment maintenance, taxicab transportation, freight forwarding services, packing and crating services, travel arranging services, and transportation ticket services.
- Automobile parking structures.
- Wholesale trade, including motor vehicles and automotive equipment, drugs, chemicals, and allied products, dry goods and apparel, groceries and related products, electrical goods, and supplies, machinery and other wholesale trade.
- Warehousing and storage services including household goods warehousing refrigerated warehousing, food lockers and general warehousing and storage.

7.B.i.e Business Park - The Business Park land use category of the Mixed Use designation specifically allows for business offices, warehouses, and light industrial. Commercial and retail are not prohibited from locating in the Business Park designation; however, the preferred use is for office, warehouse, and Light Industrial development.

7.B.i.f Resort - The Resort land use category of the Mixed Use designation is established to provide for the development and operation of temporary lodging (hotels/motels or similar temporary accommodations), recreation opportunities and associated specialized commercial guest facilities. The Resort designation may be applied to property that is within the Mixed Use area and best suited to accommodating the needs of the visiting public without inappropriate impact upon the daily functioning of Vigneto or inappropriate impacts upon surrounding properties. These uses do not constitute units or count towards the Dwelling Unit Cap. The intent is to provide for the designation and regulations of certain land uses that are primarily intended for visitors to Vigneto.



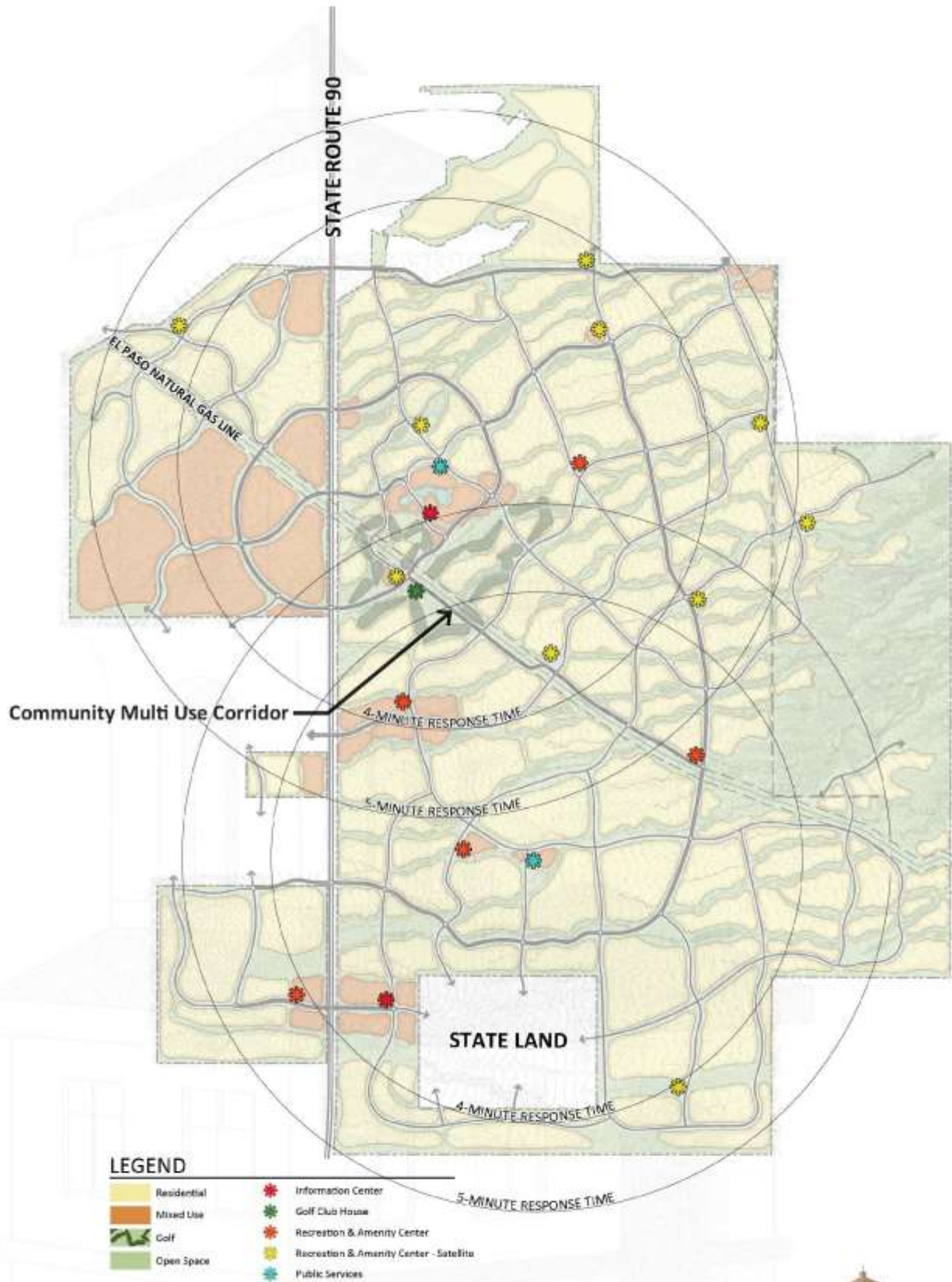
7.B.i.g Civic Facilities - The Developer will work with the City of Benson and other governmental authorities to appropriately locate the following civic uses within the Project as development progresses:

- Town Hall Complex
- Maintenance Yards
- Fire Stations
- Police Stations
- Ambulatory Stations
- Library
- Public Park
- National Forest Access
- Utilities
- Schools

7.B.i.h Recreational Facilities - Recreational centers (or “rec centers”) will serve as places for people to socialize, exercise, exchange public information and gather for the many activities the Vigneto community will offer. There will be three types of rec centers: Community, Regional and Neighborhood. Like the Vigneto parks these rec centers will be classified by size and how many people are to be served by each location. Market conditions will dictate placement and quantity of each center and location and designs will be submitted with the Planning Unit Plans of each Planning Unit phase.

- **Community Recreational Centers** - Two to four Community Recreational Centers will provide numerous sources of recreation and gathering opportunities. These centers are generally between 30,000-55,000 square feet and will service approximately 7,500-10,000 homes. Community Rec Centers will be staffed so they will be open to the public at large.
- **Regional Recreational Centers** - Six to ten Regional Recreational Centers will also provide numerous sources of recreation and gathering opportunities. These centers are generally between 8,000-16,000 square feet and will service approximately 3,500-5000 homes. Regional Rec Centers will be staffed so they will be open to the public at large.
- **Neighborhood Recreational Centers** - Neighborhood Recreational Centers will be considerably smaller than the Community and Regional Rec Centers. These centers will be generally located within groupings of multiple neighborhoods and will include a pool, relaxation area, restrooms, post offices/ mailing centers and serve as places for parking for the guests of Vigneto residents. These rec centers will served 700-1,500 homes. Neighborhood Rec Centers will not be staffed so these centers will have reserved access to residents of the neighborhoods in which they are located.





LEGEND

- | | |
|-------------|---|
| Residential | Information Center |
| Mixed Use | Golf Club House |
| Golf | Recreation & Amenity Center |
| Open Space | Recreation & Amenity Center - Satellite |
| | Public Services |

Disclaimer: This exhibit has been prepared for general planning and illustrative purposes only and is not to be relied upon for actual dimensions. The elements shown are diagrammatic and shall not be construed as a final representation of engineering design.



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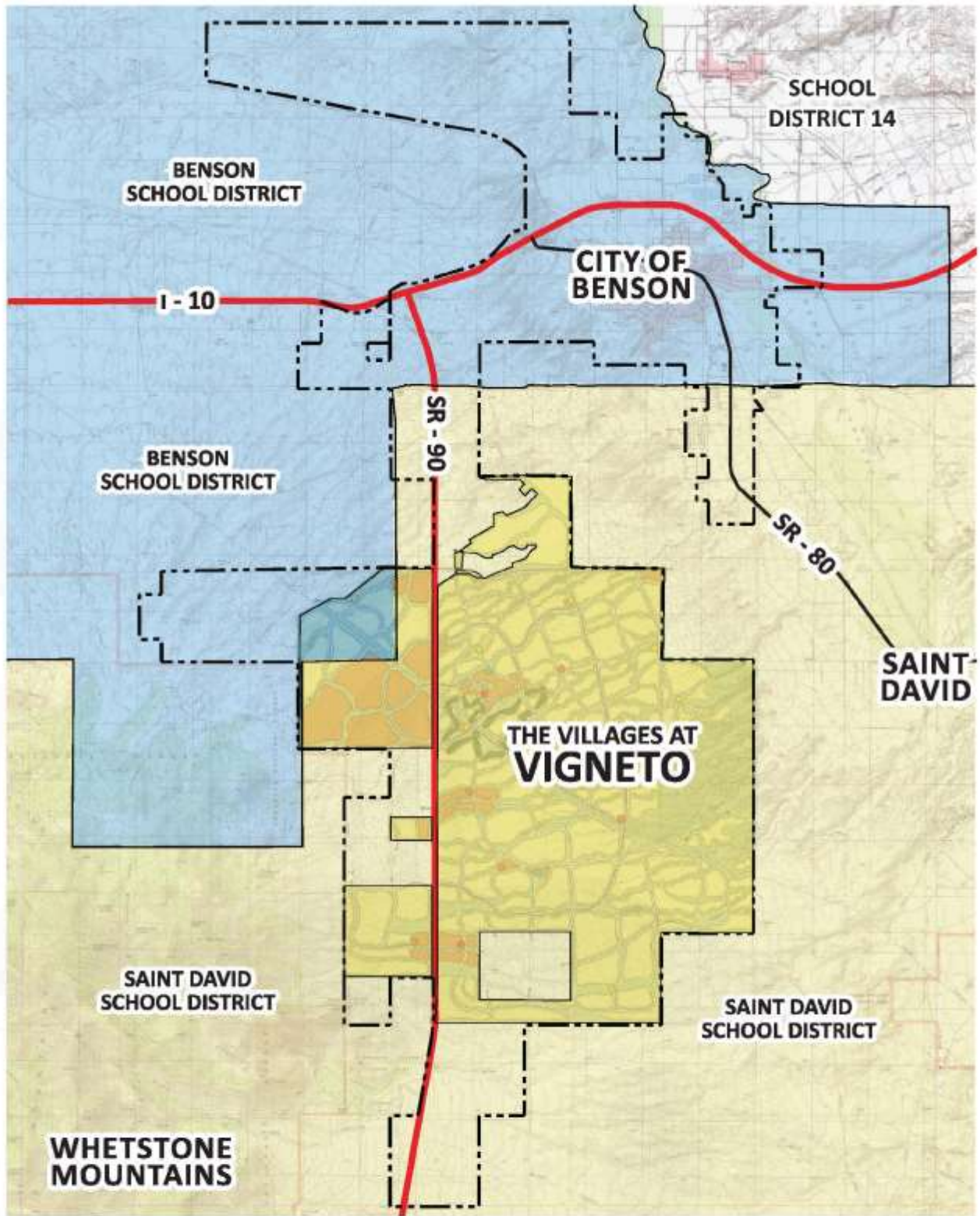


The Villages at Vigneto
EXHIBIT 17: CIVIC FACILITIES

7.B.i.i Schools - Currently, the Project is within the boundaries of two (2) school districts. St. David Unified School District covers approximately ninety-five percent (95%) of the property and Benson Unified School District covers the remaining five percent (5%). (See Exhibit 18: School District Boundary Map).

The Developer will ensure that a school development agreement is in place to meet the educational needs of the residents prior to the sale of any home. One elementary school and/or combination elementary/middle school is currently planned for the Project. Additional school sites will be reserved if market conditions result in fewer age-targeted residences than currently anticipated. Schools (including public, charter, and private schools) may be located in the Residential and Mixed Residential/Commercial areas of the Mixed Use designation. All school sites will be located to afford safe and efficient vehicular access as well as pedestrian accessibility through sidewalks and trails. Where possible, schools will be located adjacent to parks to further expand the opportunities for learning and recreation, and to allow the schools to help become the center of neighborhood gathering areas.





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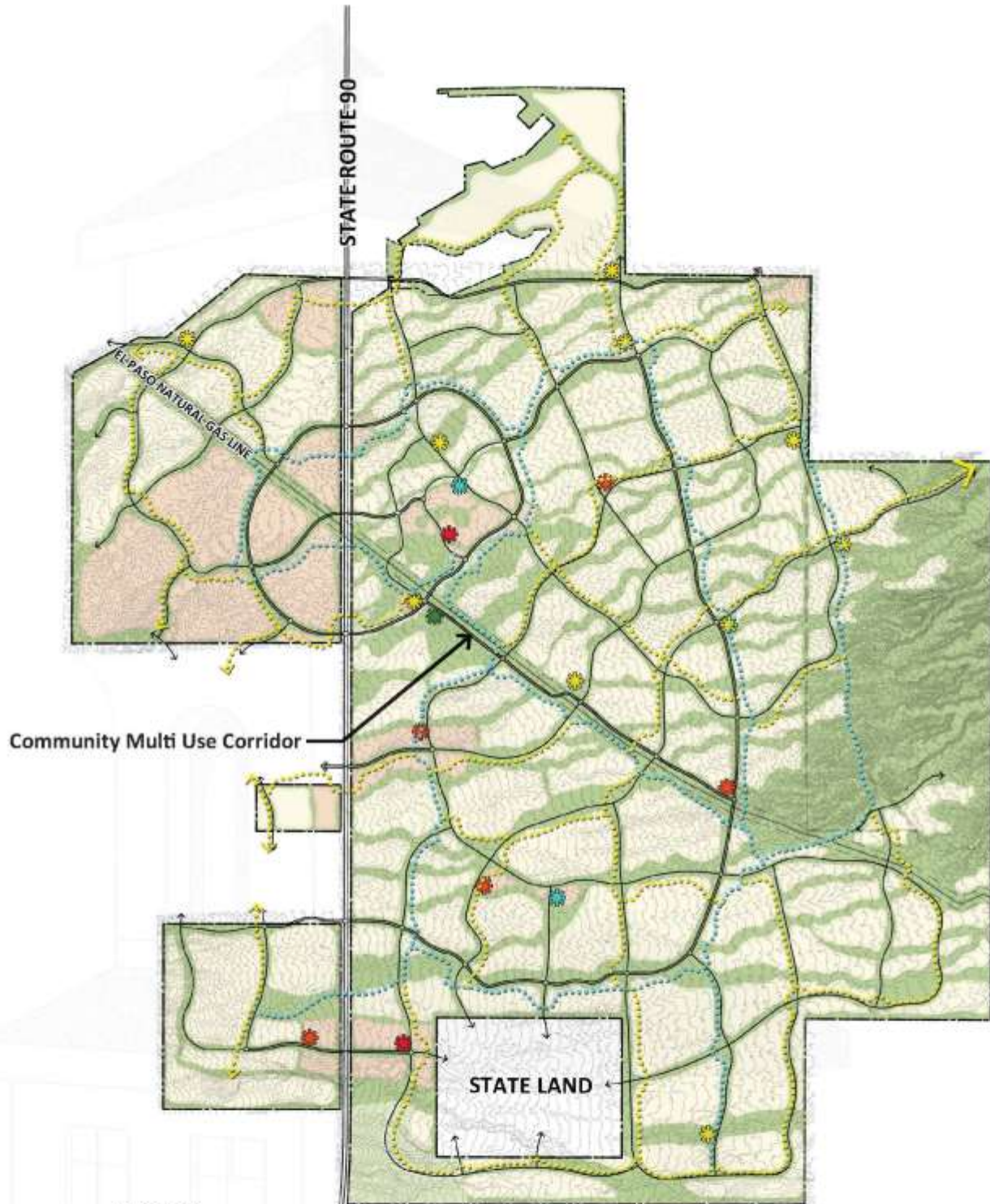
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EXHIBIT 18: SCHOOL DISTRICT BOUNDARY MAP

7.B.ii Open Space

A conceptual Open Space Plan, which includes developed and undeveloped open space, is provided on Exhibit 19: Parks, Trails, and Open Space Plan. The Open Space Plan was created to respond to and preserve land forms and natural washes on Vigneto property, and provides a minimum of twenty percent (20%) of the Project's acreage as usable open space ("Minimum Open Space"). Usable open space is an area in which the average slope of all areas intended for designation as open space is not more than five percent (5%), as measured from the western boundary to the eastern boundary of the Project, and can be used for passive or active recreation. The usable open space includes Natural Open Space (defined below), stormwater retention areas, golf courses, parks, and the path/trail system. Approximately 400 acres of the Natural Open Space is "unusable open space" because its average slope is greater than five percent (5%); the unusable open space is not included in the Minimum Open Space described in this section.





LEGEND

- | | |
|---------------------|---|
| Open Space Corridor | Information Center |
| Golf Course | Golf Club House |
| Major Trail | Recreation & Amenity Center |
| Minor Trail | Recreation & Amenity Center - Satellite |
| | Public Services |

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The Villages at Vigneto

EXHIBIT 19: PARKS, TRAILS, AND OPEN SPACE

7.B.ii.a Natural Open Space - Pursuant to the 404 Permit, a minimum of 1,624 acres within the Permitted Area will be maintained as natural open space (“Natural Open Space”). The Natural Open Space will primarily provide for flood flow conveyance and groundwater recharge, migration and dispersal for wildlife and plants, and passive recreational and educational opportunities for local residents. (Reference Illustration 9) As the Permitted Area develops, the

specific locations of the Natural Open Space will be legally defined and a restrictive covenant for preservation will be recorded.



Illustration 9 – Open Space Corridors



and Trails

7.B.ii.b Developed Open Space - Approximately 600 acres of the Project will be developed for active and passive recreation activities (“Developed Open Space”). Developed Open Space may take many forms including, but not limited to:

- Community and Neighborhood Parks
- Golf and related uses
- Agri-Business
- Recreation Centers
- Amphitheater
- Neighborhood Trails
- Regional Trails
- Utility Corridors
- Flood Management – Detention/Retention
- Recharge Facilities
- Effluent Storage and Equalization Ponds
- Human Contact Lakes



Illustration 10 – Amenities including trails and parks



7.B.ii.c Parks - The Project includes at least one community park, as well as a series of regional and neighborhood parks. The parks will be located either along the Trail System (defined below) where possible, or in the case of local parks, within subdivisions so residents may walk or bike to them without traveling outside the “neighborhood.” The parks will be maintained by an HOA.

- Community Park - At least one Community Park will be located within Vigneto. The community park is the largest of the three parks (at least 40 acres) and will accommodate all Vigneto residents. This park will feature active recreational opportunities for people of all ages. Some of the active recreation components could include a splash pad, multi-use fields, softball fields, tot lots, ramada’s, pickle ball, lawn bowling, court games, and picnic areas along with passive recreational activities. (Reference Illustration 11) The community park may also include a recreation center, amphitheater, or agri-business opportunities. Specific programming for the community park will be identified in the Planning Unit Plans of the Planning Unit in which the community park will be located.



Illustration 11 – Community park with trails and

ball fields

- Regional Parks - A series of regional parks will be located throughout the Project. Smaller in size than a community park, regional parks are intended to serve one or more Planning Units, and will offer many of the same amenities.
- Neighborhood Parks - Small neighborhood or “pocket” parks, ranging in size from ¼ acre to several acres, will be located within each neighborhood and may also serve as detention/retention areas. The neighborhood parks will be places “just down-the-street” for residents to bring their families and socialize with their neighbors. Neighborhood parks will be comprised primarily of small turf pockets and trees to provide shade and scenic beauty. There may be small shade structures with BBQ amenities and picnic tables along with open play areas. In certain locations, neighborhood and subdivision parks may be combined with adjacent trail corridors. Neighborhood parks will be located and programmed as part of the subdivision platting process.



7.B.ii.d Golf - The Developer may develop one or more public or private golf courses, which may consist of championship, executive, or practice courses, as market conditions dictate.



Illustration 12 – Golf courses integrated into the natural landscape

7.B.ii.e Agri-Business - The climate at Vigneto is well suited for grape production. Therefore, the Developer may devote some open space and future development sites to vineyards for grape production. Of course, wineries are a complimentary product of the vineyards and while some grape production may be shipped off site, it is the intention of the Developer to foster one or more winery businesses to promote small business ventures and benefit the City of Benson economy.



Illustration 13 – Vineyards

Similarly, the Benson climate is also compatible with orchard production. Some open space areas may be utilized for business-related orchard production as well as aesthetic purposes. The Developer intends to incorporate urban farming into certain Developed Open Space areas. As a complementary use, the Developer will encourage one or more public markets at Vigneto, which may include permanent and/or temporary structures for local farmers and merchants to display and sell goods. Agri-business opportunities may be allowed in both Mixed Use and Developed Open Space areas. Any Agri-business taken out of production shall remain open space after developed as Agri-business, unless approved by Development Director.



Illustration 14 – Promoting small business through wineries



7.B.ii.f Trail Systems - The extensive trail system within the Project consists of a hierarchy of trails, which include Multi-Modal Pathways, Multi-Use Lanes, sidewalks and trails ranging from narrow hiking trails to paths appropriate for pedestrian, equestrian, and bicycle use (collectively the “Trail System”). Multi-Modal Pathways will be at least 16 feet wide, and will accommodate LSVs, bicycles and pedestrians. Multi-Modal Pathways will be located within the Community Multi-Use Corridor, as well as adjacent to arterial roadways. The Multi-Use Lanes will be designed to accommodate LSV, and bicycle travel. Multi-Use Lanes will be within the pavement area of all collector roadways.



Illustration 15 – Multi-Modal Pathway connecting residents throughout the community



7.C Development Standards

Section 7.A – Land Use addressed the uses permitted within each land use category applicable to the Project, while this section establishes Development Standards for each land use category. The Development Standards contained herein deviate from the currently applicable City Building Codes and City Zoning standards (See Exhibit 20: Development Standards Table). Approval by the City of this Final CMP expressly includes approval of the Development Standards, and no separate variance or other procedure is required for use of the Development Standards on the Project.

7.C.i Residential Development Standards

Residential Development options are intended for the development of detached and attached, single-family homes with a range of lot sizes depending on site characteristics and market conditions. Lot sizes and configurations may include but are not limited to front loaded duplex, front loaded lots, rear loaded lots with detached or attached garages, and front or rear loaded “z” lots, cluster lots and auto court lots. Builder home types will include a variety of housing options, including zero lot line, wide-shallow, and others. The residential low, medium and high-density options allow for greater housing diversity in owner-occupied, high amenity, single-family neighborhoods. All residential development within Vigneto will be classified under one of the following categories:

- Low Density Single Family Residential with 0-3 development units per acre
- Medium Density Single Family Residential with 2-6 development units per acre
- Medium Density Residential (attached or detached) with 4-10 development units per acre
- Medium /High Density Residential (attached) with 8-16 development units per acre
- High Density Residential (attached) with 12-24 development units per acre

Open Air Shade Structures - An additional 20% lot coverage in excess of the base zone district is permitted for open air shade structures such as open air covered walkways, carports, and solar covered parking structures. Open air shade lot coverage includes exterior face of the support column or post to the exterior wall of building (when applicable). When only one support element is provided, lot coverage includes the area under the exterior perimeter of the covered feature.

Exceptions to height limitations - As specified in footnote (1) of exhibit 20, Development Standards table, Height regulations established elsewhere in the CMP shall not apply to the following in any land use category:

Unique monumentation, chimneys, conveyors, cupolas, derricks, domes, flagpoles, observation towers, parapet walls extending not more than four (4) feet above the height limit of the building, radio, television, or other communication towers, windmills, power transmission poles, church spires, monuments, belfries, bulkheads, elevator penthouses, water tanks, fire and hose towers,



cooling towers, gas holders, grain elevators, or other structures not for human occupancy; provided that such structures above the height limit specified for the land use category shall not in the aggregate occupy more than twenty-five (25) percent of the lot area and shall be distant not less than twenty-five (25) feet from every lot line.

Future Street Lines - Except as otherwise provided in this Final CMP, where future street lines have been officially established by the City Council, all required yard setbacks shall be measured from such projected street lines.

Projection into Required Yards - In all residential land use categories, the following regulations of projections into required yards shall apply. Please reference Exhibit 20 of the Final CMP, Development Standards Table (and the footnotes thereto), for maximum building heights and projections into required yards.

Fences, Walls, and Hedges - In all residential land use categories, the following regulations of fences, walls and hedges shall apply:

- No fence, wall, or hedge exceeding three (3) feet in height above grade shall be erected, placed, planted or allowed to remain in or along the front or side of any required front yard except that un-slatted chain link fence or wood picket fence, with at least 50% opening, not to exceed four (4) feet in height will be allowed above grade.
- No property line fence shall contain barbed wire, electrical current or charge of electricity, broken glass or similar hazardous materials or devices, provided, however, that fences in non-residential land use categories, which enclose storage areas may have barbed wire connected therewith so long as said barbed wire is located more than six (6) feet in height above grade.
- All fences and walls, with the exception of retaining walls and the provisions of first bullet in this paragraph above, will be limited to a maximum height of eight (8) feet and will be neatly constructed so as not to present an eyesore and must use the following materials: block, brick, wood, chain-link, ornamental iron, wire strand or welded wire.

Yard Space for One Building Only - No required yard or other open space around an existing building which is needed to comply with the provisions of this Final CMP, shall be considered as providing a yard or open space for another building which is to be erected or established.

Setbacks in Residential Categories - Side setbacks for non-residential buildings in any residential land use categories shall not be less than the sum of the length of the building wall measured along the side yard and the average height, divided by ten; except that no building shall be set back less than the minimum distance required in Exhibit 20 of the Final CMP, Development Standards Table (and the footnotes thereto).

Residential Land Use Categories: Yards, Height, and Accessory Structure Restrictions

In the case of corner lots, the determinations of the front and side yards shall be pursuant to Appendix A: Lot Line, Front.

Detached accessory buildings located on the rear one-third of the lot may be erected within four



(4) feet of the property line, also provided further, that when a carport is attached to the principal building it may be erected within five (5) feet of the property line. But the carport so placed must be retained as an open shelter.

In all classes of residential land use categories, there shall be a rear yard of not less than ten (10) feet in depth measured from the principal building.

Maximum building height in all residential land use categories:

- Residential Buildings - Please reference Exhibit 20 of the Final CMP, Development Standards Table (and the footnotes thereto).
- Accessory Buildings - Fifteen (15) feet above grade.

It is the intent of that all yard setbacks be measured from the property line.

Swimming Pools - See section 4 for additional design standards. No swimming pool shall be located in any minimum required front or side yard, nor shall any such pool be closer than five (5) feet to any lot line. Every swimming pool shall be enclosed by a fence or wall not less than five (5) feet in height which is so constructed, gated and locked as to discourage unauthorized entry to such pool.



DEVELOPMENT STANDARDS TABLE

	Residential					Non-Residential
	Column 1	Column 2	Column 3	Column 4	Column 5	
	Low Density Detached	Low/Medium Density Detached	Medium Density Detached/Attached ⁽⁷⁾	Medium/High Density Attached ⁽⁷⁾	High Density Attached ⁽¹⁴⁾	
Min Lot Area (sq ft)	5,000	3,500	2,240	None	None	None
Min Lot Width (ft)	45	35	32	None	None	None
Min Front Yard (ft) ^{(8) (10)} (as measured from livable area forward of garage or side entry garage)	12	10	0 (when abutting common open space) 6 (when abutting street) ⁽¹⁵⁾	0 (when abutting common open space) 4 (when abutting street) ⁽¹⁵⁾	N/A	N/A
Min Garage Setback (ft) ^{(9) (11)} (facing street ROW)	20	18	18 ⁽¹⁵⁾	18 ⁽¹⁵⁾	N/A	N/A
Min Garage Setback (ft) ^{(9) (11)} (shared driveway with joint benefit and use driveway)	0	0	0	0	N/A	N/A
Min Side Yard (ft) ⁽³⁾	5 each side or 10 Min for both sides combined	0 one side and 10 Min for both sides combined	0 one side and 10 Min for both sides combined	0	N/A	N/A
Min Street Side Yard (ft) ⁽⁶⁾	10	8	6	4	20 ⁽³⁾	20 ⁽³⁾
Min Rear Yard (ft) ⁽³⁾	15	10	5	0	N/A	N/A
Min Side Setback Adjacent to Commercial (ft) ⁽³⁾	10	10	10	Per Building Code		
Min Side Setback Adjacent to any Residential in Columns 1-4 (ft) (1-story/2-story/3-story) ^{(2) (3)}	N/A	N/A	N/A	N/A	10/15/20	10/15/30
Min Side Setback Adjacent to Column 5 Residential (ft) (1-story/2-story/3-story) ^{(2) (3)}	N/A	N/A	N/A	N/A	Per Building Code	10/15/30
Max Building Height (ft) ⁽¹⁾	26 - One Story 28 - Two Story	26 - One Story 28 - Two Story	22 - One Story 28 - Two Story 30 - Two Story above parking garage	22 - One Story 28 - Two Story 30 - Two Story above parking garage 38 - Three Story with common parking	42 ⁽²⁾	42 ⁽²⁾
Max Lot Coverage	60%/50% ⁽⁴⁾	60%/50% ⁽⁴⁾	70% ⁽⁴⁾	95% ⁽⁴⁾	55% ⁽⁵⁾	55% ⁽⁵⁾
Max Density (du/ac)	0.1-3.0	2.0-6.0	4.0-10.0	8.0-16.0	12.0-24.0	N/A
Min Open Space (based on net acres) ^{(12) (13) (16)}	5% per Parcel 20% per Overall Project					

EXHIBIT 20 – Development Standards Table



Detached Accessory Buildings		
	Column 1	Column 2
	Low Density Detached	Low/Medium Density Detached
Permitted Coverage	1/3 of the total area of the rear and side yards	
Max Height (ft)	10 (less than 120 sf) 20 (greater than 120 sf)	10 (less than 120 sf) 20 (greater than 120 sf)
Min Distance to Main Building (ft)	Per Building Code	
Min Distance to Front Lot Line (ft)	Behind front line of principle structure	
Min Distance to Side Lot Lines (ft)	3 (less than 120 sf) 5 (greater than 120 sf)	3 (less than 120 sf) 5 (greater than 120 sf)
Min Distance to Rear Lot Line (ft)	3 (less than 120 sf) 5 (greater than 120 sf)	3 (less than 120 sf) 5 (greater than 120 sf)
Min Distance to Non-Street Side (ft)	N/A	N/A
Min Distance to Street Side (ft)	N/A	N/A

Footnotes:

(1) Building height to be measured from the highest finished grade adjacent to the building. Exceptions to building height limitations include:

- Unique CMP Entry monumentation, chimneys, conveyors, cupolas, derricks, domes, flagpoles, observation towers, campaniles and spires, not for human occupancy other than for servicing purposes,
- Parapet walls extending not more than four (4) feet above the height limit of the building,
- Radio, television, or other communication towers, power transmission poles,
- Church spires, monuments, belfries, bulkheads, elevator penthouses, water tanks, fire and hose towers, cooling towers, gas holders, grain elevators, or
- other structures not for human occupancy; provided that such structures above the height limit specified for the land use category shall not in the aggregate occupy more than twenty-five (25) percent of the lot area and shall be distant not less than twenty-five (25) feet from every lot line
- Any elevated storage facility, water tower, or other structure where a large weight would be supported by legs, structural wall or other supports shall be so located that if it should collapse, its reclining length would still be contained on the property on which it was erected.



- Churches, hospitals, sanatoriums, schools, auditoriums, movie and performing arts theatres, or other public and semi-public buildings. Any such building may be erected to a height not exceeding 56 feet, provided the minimum side and rear yards are increased by an additional 1-foot in width or depth for each foot by which the height of such buildings exceed the maximum height permitted in the zone in which such building is to be located.
- Elevator mechanical rooms, penthouses, monitors, and water tanks.
- Monuments or towers.

(2) **Building height** may be increased to a maximum of 56 feet with approval of Planning Director. An additional one-foot setback shall be provided for every one-foot of height above 38 feet when adjacent to residential. If the building height exceeds the maximum serviceable height for the City of Benson Fire Department the owner/developer may elect to provide a construction type or fire apparatus equipment to meet the fire serviceability requirements of the structure, or design and construct the building to meet the adequate building classification if the fire apparatus equipment is not tall enough.

(3) **Projections into yards** may include:

- Unenclosed porches and stairways, unroofed and unenclosed above or below floor or steps, may project not more than 3 feet into any minimum non-street side/side or rear yard.
- Unenclosed and covered patio may project not more than 10 feet into minimum non-street side/rear yard and not more than 3 feet of overhang into any minimum non-street side/side yard.
- Architectural features such as, but not limited to, fireplaces, bay windows, shadow boxes, pot shelves, and other pop-outs, can encroach up to 3 feet into front, side, or rear setbacks.
- Ground mounted air conditioning unit, or other mechanical equipment, may project not more than 4 feet into rear and side yards but shall provide a clear distance at least 2.5 feet from rear or side yard fence line or adjacent dwelling structure when fence is not provided. Ground mounted mechanical equipment shall be screened from public view by a minimum 4-foot high solid wall, fence and/or landscape.
- In any high density attached, covered parking a distance of at least 5 feet from lot line may project into any minimum non-street side yard.
- In any business, a marquee, canopy or awning, suspended or cantilevered from a building, either for the purpose of, or giving the appearance of shelter or shade may project not more than 10 feet into any minimum street side yard.
- Side setbacks for "Z"-Lots and "O"-Lots shall be 4 feet aggregate, 0 feet minimum at shared use easement.

(4) **Lot Coverage** is calculated by the total structural coverage provided on a lot or site inclusive of all roofed areas or structures capable of supporting a roof divided by the net area of the lot or site. The first three feet of roof overhang or projection shall not be included in the lot coverage.



- (5) **Lot Coverage** is calculated by the total structural coverage provided on a lot or site inclusive of all roofed areas or structures capable of supporting a roof divided by the net area of the lot or site. Lot coverage is exclusive of the first six feet of roof overhang.
- (6) 8-foot and greater tracts between the lot and street shall count towards "street side yard" requirement, as long as the minimum "side yard" or "non-street side yard", as appropriate, on lot is maintained.
- (7) **Cluster Housing** Medium density residential housing product may consist of, but not limited to courtyard, patio home, 'z' lot, duplex, triplex, or other non-conventional housing product. May be attached or detached. A 3-foot use (access, drainage, utility) easement may be located adjacent to a benefited lot on a burdened lot, where applicable.
- (8) **Fencing** limited to a maximum height of 3 feet is allowed within the front yard.
- (9) No front facing garage shall extend forward of a home's livable area by more than eight feet.
- (10) "Building" denotes side entry garage and/or living space.
- (11) **Garage setback** shall be measured from back of sidewalk or to back of curb for streets without sidewalk.
- (12) **High Density Attached** - private open space or common elements shall contribute towards the required minimum of 20% usable open space for the Project.
- (13) **High Density Attached housing** product consists of apartments, condominiums, stacked flats or townhomes.
- (14) **Setbacks to garages and livable area** where fronting on a private access (or joint benefit and use easement) way (for courtyard homes or similar product) and/or alleys (for alley loaded homes) are reduced 5 feet, subject to demonstration that a passenger vehicle can maneuver in and out of the garage without encroaching on the property on the opposite side of the private access way or alley.
- (15) **Useable Open Space** - As parcels are platted or site planned, the amount of usable open space will be tracked to insure the minimum 20% usable open space is provided for the overall Project.
- (16) **Small lot / Lot Coverage** - Smaller lots with greater lot coverage may be permitted by the Planning Director.

7.C.ii Non-Residential Development

Town Center Development - This category is specific to the Town Center area and encourages a mix of neighborhood commercial and office uses. This could include multi-story development with commercial and/or retail activities occurring at ground level with professional offices above, or entire buildings dedicated to office uses adjacent to other commercial uses. This category is intended to contain smaller scale commercial activities (not large retail outlets) as well as smaller scale office activities. The Town Center Design Guidelines, when developed, should contain



details about the size, design, configuration of the proposed uses and the desired mix of commercial and office development. Review of the site and design plans of each mixed-use project will be done as part of the City's site plan approval process.

Uses permitted in the Villages at Vigneto Town Center areas include:

- Retail sales of all types including, but not limited to: golf cart stores, sporting goods stores, furniture stores, decorating accessory stores, small hardware stores
- Medical/Dental offices
- Bars and restaurants
- Boutique hotels/ hotels
- Banks and financial institutions
- Day care facilities
- Business, professional, or government office
- Pharmacy
- Grocery stores
- Barber or beauty salon
- Dry cleaner
- Furniture and appliance repair
- Health club
- Project Marketing Center (Vigneto)
- Project offices (Vigneto-with no size limitations)
- Entertainment establishments including electronic game centers, arcades, ice rinks, pool halls, performing art centers, and theaters
- Convenience stores
- Business services, including advertising services, consumer and mercantile credit reporting services, insurance services, duplicating, mailing, and stenographic services, dwelling and other building services, new syndicate services and employment services
- Repair services (electrical, radio and television, watch, clock, jewelry, upholstery and furniture repair, armature rewinding services, and similar light duty maintenance)
- Temporary and/or ongoing event zones, where such events may include, but are not limited to, art, music, food, and wine festivals/shows/concerts, outdoor markets, and other pedestrian oriented social gathering areas where food and beverage, entertainment, and shopping opportunities are permitted
- Temporary vendors using carts, tents or booths
- Other compatible uses as reviewed and approved by the Planning Director

Utility Corridors

Local utility services are critical to development. Public utility companies provide water, electricity, telephone, natural gas, cable television, and telecommunication services under the regulatory authority of the Arizona Corporation Commission ("ACC"). In some cases, special improvement districts also provide utilities. All utilities should be installed and maintained per all local, county and state regulations.





7.D Conditional Uses

The following are conditional uses, which may be permitted within Vigneto subject to the standards detailed herein.

- Solid waste transfer stations and solid waste landfills anywhere within Vigneto.
- Recycling centers anywhere within Vigneto.
- Cemeteries anywhere within Vigneto.
- Nursing care institutions, only if proposed location is in residential land use category.
- Day care, group homes, only if proposed location is in residential land use category.
- Specialized treatment homes, halfway houses, and domestic violence shelter facilities, only if proposed location is in residential land use category.
- Sending or receiving towers for radio, television or communications.
- Bed and breakfast facilities for short stays with meal service restricted to registered guest only if proposed location is in a residential land use category.
- Swap meets only if proposed location is in a residential land use category.
- Any other use not permitted in the Final CMP or analogous to an expressly permitted use, as determined by the Planning Director.

The Planning & Zoning Commission may approve, approve with conditions, or deny the application for a conditional use permit. In permitting a new conditional use or the alteration of an existing conditional use, the Planning & Zoning Commission may impose, in addition to those standards and requirements specified by this Final CMP, additional conditions which it finds necessary to avoid detrimental impacts and to otherwise protect the best interests of the surrounding area or the community as a whole. These conditions may include, but are not limited to, the following:

- Limiting the manner in which the use is conducted, including restricting the time a certain activity may take place and restraints to minimize such environmental effects as noise, vibration, air pollution, glare and odor.
- Establishing special yard, open space, parking requirements, lot area or dimensional requirements.
- Designating the height, size, appearance or location, of a building or other structure or use.
- Designating the size, number and location and nature of vehicle access points.
- Designating the size, location, screening, drainage, surfacing or other improvements of a parking area or loading area.
- Limiting or otherwise designating the size, location, height and lighting of signs.
- Limiting the intensity of outdoor lighting and require its shielding.
- Requiring diking, screening, landscaping or other facilities to protect adjacent or nearby property and designate standards for its installation and maintenance.
- Designation the size, height, and location of screening and materials for a fence.
- Protecting and preserving existing trees, vegetation, water resources, wildlife habitat or another significant natural resource.



Locational Criteria - The provisions of this section are designed to provide siting criteria and guidelines for the imposition of additional conditions not specifically provided for herein, to the end that such uses will:

- Be consistent with the intent and purpose of the land use category in which it is proposed to locate such use;
- Meet the requirements of the General Development Plan with regard to providing benefit to the general welfare of the public.
- Fill a probable need of the public, which can best be met by a conditional use at this time and in this place.

Conditional Uses shall be located subject to the following specific standards:

- Buffering, screening or other means shall be used where necessary to protect the privacy and safety of neighboring properties.
- Solid waste landfills, transfer stations, natural gas storage, sewage treatment plants and electrical generating facilities shall not be in or adjacent to established residential areas.
- Solid waste landfills, transfer stations, natural gas storage, sewage treatment plants and electrical generating facilities will not be provided access from residential streets. Recycling centers, water reservoirs, telephone communication and switching facilities shall not provide access from residential streets.
- The site layout conforms to the established street and circulation pattern and the General Development Plan.
- Noise levels and lights from the facility will not interfere with adjacent land uses, or in any way create a nuisance.

Application for Conditional Use - A request for a conditional use, modification of an existing conditional use permit, or a review of an existing conditional use permit shall be initiated by the property owner or his authorized agent by filing an application with the Community Development Department. Such application shall include:

- Full information regarding the proposed locations, area, height, and placement of such use, and shall be accompanied by a site plan.
- A vicinity ownership map drawn to scale showing all parcels in the vicinity adjacent to and surrounding the property proposed for conditional use within three hundred (300) feet of the exterior boundaries of the property.
- A typed or printed list containing the names and mailing addresses of the owners of parcels within three hundred (300) feet of the boundaries as indicated above and identified by the same number as on the vicinity ownership map. Correct zip codes must be shown for each address.

An application filed pursuant to this section shall be accompanied by the required fee. Such fee shall be determined according to a fee schedule established by the City Council.

The Community Development Director shall review each application for technical compliance with established application requirements. The application shall be formally accepted for



approval processing or rejected within five (5) working days.

Review Procedures - All applications for conditional use permits shall be considered by the Planning & Zoning Commission at a public hearing.

The public hearing notice shall contain:

- The location and description of the proposed conditional use; and,
- The time and place of the public hearing at which comments on the proposed use may be presented.

The Planning & Zoning Commission shall review each application to insure compliance with the criteria and requirements set forth in this Final CMP.

Revocation of a Conditional Use Permit - Any previously granted conditional use permit may be revoked by the Planning & Zoning Commission, after a hearing conducted in the manner required for approval of the original conditional use permit upon any one of the following grounds:

- Failure to comply with the conditions of approval.
- Discontinuance of the use for a period in excess of one (1) year.
- Failure to comply with applicable provisions of the General Development Plan regarding design, size or use requirements.
- A change in the General Development Plan or requirements of the land use category within which the use is located that have the effect of no longer allowing a new conditional use permit application to be considered in such land use category.

Revocations shall have the effect of making the previously granted conditional use permit void until a new application is submitted and granted or in the case of a change in the General Development Plan as above, shall have the effect of making the previously granted conditional use a non-conforming use.

Automatic Termination of a Conditional Use - Unless otherwise approved, a conditional use permit shall automatically become null and void one (1) year after the effective date upon which it was granted unless utilization was started.



7.E Supplemental Regulations

Intent - It is the intent of this section to set forth supplementary and qualifying conditions, which must be complied with, in connection with uses permitted within Vigneto.

Elevated Storage Facilities - Any elevated storage facility, water tower, or other structure where a large weight would be supported by legs, structural wall or other supports shall be so located that if it should collapse, its reclining length would still be contained on the property on which it was erected.

Flammable Storage - The following minimum regulations apply to the dispensing and bulk storage of all flammable products in all land use categories: Retail storage tanks shall comply with State Fire Marshal regulations and Section 8 of the Final CMP.

Gasoline Station Pumps - In any land use category, no gasoline pump island shall be located closer than fourteen (14) feet to any right-of-way or property line or closer than fifty (50) feet to any residential land use category.

Sale or Lease of Required Space Prohibited - No space needed to meet the width, yard area, coverage, parking, frontage on a public street or other requirement of this Final CMP for a lot or building may be sold, bequeathed or leased apart from such lot or building unless space so complying is provided; nor shall any land be sold which will result in an existing or future lot for dwelling purposes that does not comply with all the provisions of this Final CMP.

Accessory Building Prohibited as Living Quarters - Living and sleeping quarters shall not be permitted in any accessory building in any residential land use except for guesthouses.

Storage of Junk Prohibited in Residential Land Use Categories - No yard or other open space surrounding an existing building in any residential land use category, or which is hereinafter provided around any building in any residential categories, shall be used for the storage of junk, debris, or obsolete vehicles and no land shall be used for such purposes, except as specifically permitted herein.

Storage of Trucks Prohibited in Residential Land Use Categories - The storage of more than one (1) truck having a rated capacity of more than one and one-half (1 1/2) tons and the storage of construction equipment such as bulldozers, graders, dump trucks and others shall not be permitted on any lot in residential land use category areas; except, however such construction equipment may be stored on a lot during construction of building thereon, but not to exceed one (1) year.

Roof Drainage - Surface water from rooftops shall not be allowed to drain directly onto adjacent lots except after written agreement between the two adjoining property owners is recorded in the office of the County Recorder.

Temporary Uses and Structures - The following regulations shall govern the operation of certain transitory or season uses:



- **Permits** - Application for a temporary building or use permit shall be made to the Zoning Inspector and shall contain the following information:
 - A description of the property to be used rented or leased for the temporary use, including all information necessary to accurately portray the property.
 - A description of the proposed use.
 - Sufficient information to determine the yard requirements, sanitary facilities, and availability of parking space to service the proposed use.
- **Uses** - The following are temporary uses and are subject to the following specific regulations and time limits, in addition to the requirements of any land use category in which the use is located:
 - **Carnival or Circus** - When authorized by the City Council, a temporary use permit for a carnival, or circus may be issued in any land use category, for a period not longer than fifteen (15) days. A use permit is not required for a Carnival or Circus located in an event zone or amphitheater.
 - **Christmas Tree Sales** - A temporary use permit, when authorized by the City Council, may be issued for the display and open-lot sales of Christmas trees for a period not longer than forty-five (45) days.
 - **Contractor's Office** - In any land use category, a temporary use permit may be issued for a contractor's temporary office and equipment sheds incidental to a construction project. The permit shall be valid for not more than one year but shall be renewable for one year. The office and/or shed shall be removed upon completion of the construction project.
 - **Real Estate Sales Office** - In any land use category, a temporary use permit may be issued for a temporary real estate sales office in any new subdivision, which has been approved in accordance with the Final CMP. The permit for such office shall be valid for not more than one (1) year, but is renewable for up to three (3) years. The office shall be removed upon completion of the development. A model home may be used as a temporary sales office.

Permitted Home Occupations - A home occupation may be permitted upon application to the Zoning Commission in any residential land use category, subject to the following conditions:

- The home occupation must be registered with the City Clerk and subject to review by the Planning and Zoning Commission. The Zoning Inspector will issue a permit, a copy of which will be forwarded to the County Assessor's Office.
- Offices of members of recognized professional persons may be permitted, provided that no more than one person, not a member of the household, may be employed in connection with such operation in such office. One small professional or announcement sign not over one (1) square foot in area shall be allowed affixed to the main wall of the main residence dwelling.
- A Public Hearing will be held for each application.



Outdoor Theater - The following minimum regulations shall apply to outdoor theaters:

- The minimum lot area shall be ten (10) acres.
- No outdoor theater shall be located within three hundred (300) yards of any residential subdivision.
- The face of the screen shall be located a minimum of seven hundred (700) feet back from the highway or street right-of-way line, if visible from said highway or street.
- Only one-way traffic shall be permitted on the site of an outdoor theater.
- There shall be at least one (1) emergency exit.
- Entrance line shall be capable of handling a minimum of thirty (30) percent of theater capacity.
- Landscaping shall be provided.

Cemeteries - For purposes of this Final CMP, cemeteries shall be considered as a use permitted upon appeal in any land use category. The application for such use permit shall indicate among other things, the total number of lots, roads, and landscaping and maintenance provisions.

Automobile Service Stations - No building permit shall be approved for an automobile service station unless accompanied by the following:

- A site plan showing the building area, service area and sales area;
- Rendering of buildings, the construction of which, shall be in reasonable conformity thereto. All structures shall be of a design character that is appropriate to the area in which they are to be constructed. All canopies shall be connected to the roof of the main structure unless otherwise approved;
- A detailed landscape plan showing plant type, size and spacing;
- A solid wall or fence at least six (6) feet in height shall be required between all-automobile service station sites and adjoining residential land use categories;
- All signs and outdoor lighting shall be placed in such a manner so as not to interfere or confuse traffic or present any hazard to traffic.

Recreational Vehicles - No recreational vehicles shall be used for any permanent dwelling purposes unless placed within a recreational vehicle park; permanent dwelling purposes shall be a period of time that exceeds seventy-two (72) hours.

Parking or storing unoccupied recreational vehicles outside of a recreational vehicle park is not permitted unless it is in an enclosed structure or in a public or commercial storage facility.

A repairman who operates a licensed business in Benson must acquire a permit from the Zoning Administrator for a self-contained vehicle to be lived in for up to five (5) days while the vehicle is undergoing emergency repairs.

No parking of recreational vehicles shall be allowed in City parks overnight or between the hours of 11:00 p.m. and 5:00 a.m. without a special events permit approved by the City Council.



Parking of an occupied recreational vehicle may be permitted in any land use category provided that:

- The recreational vehicle is fully self-contained or the occupants have full access to approved sanitary facilities.
- The term of stay is limited to seventy-two (72) hours for outdoor sales and special events. The term of stay is limited to thirty (30) days for private guests classified as non-business uses.
- The vehicle is parked upon the property of a consenting landowner and does not interfere with the adjoining landowner's use or enjoyment of their property.
- The landowner does not charge or receive any monetary remuneration.

Violations of this ordinance shall be a misdemeanor subject to the penalties of Ordinance 261, Section 2 of the City Code.

Education and Recreational Buildings and Uses - Schools, colleges, churches, public libraries, public museums, public art galleries, municipal recreational buildings, playgrounds, parks, and fraternal uses, as well as public utilities to service the area as necessary within the limits of the City of Benson, are permitted uses anywhere in the Project and are subject to site plan review pursuant to Section 3 of this Final CMP.

No gasoline filling stations, automobile repair shop, public garages, or parking lots shall have an entrance or exit for vehicles within thirty (30) feet of a residential zone, nor shall any part of gasoline filling station, public garage or automobile repair shop be within fifty (50) feet of the grounds of any school, public playground, church, hospital, sanitarium, public library or in situations for dependents or children.

Keeping Of Livestock And Pets - This paragraph shall not be construed as prohibiting the keeping of ordinary domestic pet animals upon property within the Villages at Vigneto. Horses, burros, donkeys and mules are permitted within the Vigneto, but only in areas designated for agri-business or community gardening or equestrian or on residential lots that are a minimum of one (1) acre in size.

All City, County and State sanitary and health regulations shall be complied with and met as well as the following provisions:

- No cattle, sheep, hogs, rabbits, poultry, or other livestock shall be kept or maintained on any property within the Villages at Vigneto, except that that poultry (excluding roosters) may be kept in areas of the Villages at Vigneto designated for agri-business or community gardening or on residential lots that are a minimum of one (1) acre in size.
- No exotic or unusual types of pet animals or reptiles shall be allowed on any residential lot within the Villages at Vigneto without approval of the Board of Adjustment; however such animals may be kept in areas of the Villages at Vigneto designated for agri-business or community gardening.
- FFA and 4H projects are allowed in areas of the Villages at Vigneto designated for agri-business or community gardening or on residential lots that are a minimum of one (1)



acre in size.

Nothing in this section on livestock will be construed to permit any animals, whether permitted or not permitted within a particular zone, to run free and uncontrolled. Any and all of such animals are subject to seizure and impoundment by the City of Benson at the expense of the owner thereof.

7.F Recreational Vehicle Parks (“RV Parks”)

Intent -The intent of this regulation is to encourage development of well-planned recreational vehicle parks, and to provide minimum standards for these Parks. These regulations govern recreational vehicle parks that offer spaces for rent, lease, or sale.

Location - RV Parks may be accessed by collector or local streets.

Permitted Uses - The following uses are permitted within the RV Parks:

- One occupied Recreational Vehicle per space, or
- A Manager’s quarters
- Two Accessory uses per recreational vehicle space.

Accessory Uses - Accessory uses for recreational vehicle parks include community recreation buildings, facilities, laundry buildings, an office building, childcare facilities, and other facilities designed for the benefit of the park residences. Accessory uses for recreational vehicle park spaces include carports, ramadas, cabanas, covered patios, and storage rooms. Accessory buildings shall not be used as sleeping quarters.

Conditional Uses - The following conditional are specific to RV Parks; however they must go through the permitting process as described in Section 7.D – Conditional Uses above.

These uses are as follows:

- A boat, auto, RV, or trailer storage area.
- Recreational uses intended primarily for the occupants of the park.
- Convenience store.
- A propane station.
- Vehicle wash area.
- Other conditional uses approved by the Planning & Zoning Commission that would primarily serve the residents of the park.
- Dump stations.

Prohibited Uses - The following are prohibited uses specific to RV Parks:

- Truck campers that are removed from the truck.
- Any retail business not for the exclusive use of the park residents.
- Park models.



Site Development Standards - RV Park Site Development Standards listed below supersedes and controls in case of conflict with any other section in this Final CMP. These standards are as follows:

- Minimum Park Size: five (5) acres
- Minimum Park Setback: twenty feet (20') from all City street frontages measured from the right-of-way line and 10 feet on all other sides. The street setback areas shall be landscaped and screened with a minimum five (5) foot high decorative masonry wall. These setback areas shall contain a minimum of one (1) tree, not less than fifteen (15) gallons, per forty (40) lineal feet of street frontage, with forty five percent (45%) vegetative cover in shrubs and groundcover on the street side of the wall. The landscape and screening plan shall be approved by the Planning & Zoning Commission.
- Park Standards
 - Minimum space size: fifteen hundred (1500) sq. ft. for recreational vehicle spaces
 - Minimum common recreation area per unit: one hundred fifty (150) sq. ft.
 - Minimum width per space: thirty feet (30') for each RV.
 - Minimum depth per space: fifty feet (50') for each RV.
 - Detached storage buildings are permitted on each recreational vehicle space. All storage buildings shall be located in the rear ½ of the recreational vehicle space. Detached storage buildings shall not encroach into the required setbacks, and are subject to the fire wall requirements set in the Final CMP.
 - Accessory structures shall be architecturally compatible with the recreational vehicle or park model itself, and shall meet required setbacks.
 - When a carport is attached to the principal building, it may be erected within five (5) feet of the space line. The carport so placed must be retained as an open shelter.
- Plans for common recreation area shall be provided in site plans for RV Parks.
- Access to all spaces shall be from the interior of the park or subdivision.
- Private streets shall comply with the Final CMP, except that private streets shall be a minimum paved width of twenty-four feet (24') including twelve feet (12') access going both ways, and may include an additional third lane for turning movements and/or emergency evacuation.
- At least one (1) parking space per rental unit space shall be provided and may be incorporated into each rental space. In addition, at least one (1) additional guest parking space shall be provided for each ten (10) rental spaces.
- The maximum height for any structure on a recreational vehicle space shall not exceed fifteen (15) feet.
- All structures not located on a recreational vehicle space shall not exceed thirty (30) feet in height from grade to the highest point on the structure.
- All utility lines shall be placed underground within an RV Park. Each space shall be provided with water, sanitary sewer, and electric lines. Telephone lines, and cable TV lines, if installed, will also be underground. Fire hydrants shall be installed as required by the City of Benson standards.
- All RV Parks shall have a minimum of two vehicular entrances. One entrance may be kept closed to the general public, but is required to meet public safety standards for



emergency ingress and egress.

7.G Parking

Introduction - Section Fourteen of the City of Benson Zoning Regulations is incorporated as supplemented and modified in Section 7.G of the Final CMP. Both traditional family and active adult development shall adhere to the provisions of Section 7.G; however active adult development must follow these added provisions:

- **Active Adult Development** - For all active adult development the Developer will adhere to Section 7.G below; however, for all active adult development, the Developer must first fulfill the following requirements:
 - The minimum required off-street parking for single-family detached, semidetached and attached dwelling units shall be 1.5 spaces, one that may be provided in a garage. At least one of the required spaces must be located behind the front yard setback.
 - The minimum required off-street parking for multifamily dwelling units shall be 1.5 spaces.
 - The minimum required off-street parking for all other uses in an active adult community shall be one space for each 200 square feet of floor area.
 - Parking areas for 20 vehicles or more shall be screened from adjacent structures and roadways by hedges, planting screens, landscaped berms, walls, solid fences or changes in grade.
 - No more than 15 parking spaces shall be permitted in a continuous row without being interrupted by a landscaped island.
- In the case of a conflict between these active adult provisions in this introduction section and the rest of Section 7.G, these active adult provisions shall control.

Traditional Family Development – For all traditional family development the Developer will adhere to the provisions in Section 7.G below.

7.G.i Off-Street Parking And Loading Regulations

Generally - In all land use categories, off-street parking facilities shall be provided in an amount not less than that hereinafter specified, for the parking of self-propelled motor vehicles, for the use of occupants, employees, patrons, members and clients of buildings and uses erected in Vigneto.

The owner or occupant of any building or use subject to off-street parking requirements under these regulations shall not discontinue or reduce any existing required parking lot without first having established other parking space in replacement therefore, which replacement space meets all requirements of this Final CMP.

The use of off-street parking space as required under this Final CMP, for the storage of merchandise, vehicles for sale or rent, or repair of vehicles, shall be expressly prohibited.



7.G.ii Computation of Off-Street Parking Requirements

When a principal building or use includes several different types of activities which generate different levels of parking need, according to the schedule set forth in this section, the minimum required number of off-street parking spaces shall be the sum of individual requirements for the several uses computed separately.

When used in computation of off-street parking requirements, the term “employees” shall include proprietors and administrative personnel as well as all other personnel engaged on the premises in the use of a building, structure, or lot. The “number” of employees shall be the greatest number on duty on the premises at any one time, day or night.

When computation of parking requirements results in a fractional requirement, any fraction of one-half ($1/2$) or less shall be disregarded, and any fraction over one-half ($1/2$) shall be counted as one (1) space.

7.G.iii Measurements of Off-Street Parking Space

Every required off-street parking space except as hereinafter provided, shall have a minimum width of nine (9) feet and a length of twenty (20) feet, exclusive of access drives and aisles. When used as a unit of measurement of unmarked parking lots, each required space shall constitute an area of not less than two hundred eighty (280) square feet which shall include drives and aisles.

Since two-wheel and three-wheel motor vehicles are becoming an accepted part of the transportation scene, provision is hereby made for determining the size and number of spaces allocated to this type vehicle in any parking lot. The size of a space for parking a two-or three-wheel motor cycle shall be one-half ($1/2$) the size of that required herein for a conventional four-wheel vehicle, that is one hundred forty (140) square feet per space in an unmarked parking lot. In parking lots with marked spaces, the size of the space shall be no less than four and one-half ($4\ 1/2$) feet wide and twenty (20) feet in length provided these spaces are aligned in the same row with spaces of four-wheel vehicles. If the parking spaces for motorcycles are separated from those allocated to four-wheel vehicles or not in the same line, the size of the motor cycle space shall be not less than four and one-half ($4\ 1/2$) feet in width and ten (10) feet in length. In either case, the number of motorcycle spaces shall be counted in the total number of spaces required for an authorized use provided that not more than five-percent (5) of the total number of spaces are allocated to motorcycles.



7.G.iv Location of Required Off-Street Parking

For Residential Uses - Required off-street parking shall be located on the same lot or parcel as the use it is intended to service; provided, however, that parking for cooperative or condominium-type multi-family residence may be provided in a parking lot not farther than two hundred (200) feet from the entrance to each dwelling unit it is intended to service.

For Non-Residential Uses - Required off-street parking shall be located within three hundred (300) feet of the building or use it is intended to service, the distance being measured from the nearest point of the building or use to the nearest point of the parking lot; provided, however, that parking facilities for a stadium, auditorium, outdoor sports arena, or similar use may be located not farther than thirteen hundred (1,300) feet from the nearest point of such building or use.

7.G.v Methods of Providing Required Off-Street Parking

Required off-street parking may be provided by any one or combination of the following methods:

- By providing the required parking space on the same lot as the building or use being serviced.
- By the collective provisions of required parking for two (2) or more buildings or uses whereupon the total of such parking shall be not less than the sum of the requirements for the several buildings or uses computed separately; provided, however, that if two (2) or more of such buildings or uses have operating hours which do not overlap, the Board may grant a reduction of individual and collective requirements based upon the special circumstances involved. A written contract for joint use of such facilities shall be executed between the parties concerned and copy filed with the Zoning Inspector.
- By securing the consent to use off-street parking facilities under another ownership which is not otherwise used during the principal operating hours of the building or use in question; provided, however, that consent shall be in written form and a copy filed with the Zoning Inspector.

7.G.vi Schedule of Required Off-Street Parking

The minimum number of off-street parking spaces required for buildings, structures and uses shall be determined according to the schedule herein set forth. For use not specifically listed, requirements shall be the same as those for the most similar use listed. Multiple uses will be additive.

Single and multi-family	1 1/2 per dwelling unit
Boarding houses, resident	1 per dwelling unit plus 1 clubs, hotels and motels per guest room or suite plus 1 per 3 employees



Mobile home and recreational vehicle parks	1 1/2 per mobile home or recreational site plus 1 per 2 employees
Hospitals, sanitariums, convalescent homes	1 per 3 beds plus 1 per resident doctor plus 1 per 3 non-resident employees
Medical and dental offices and clinics	3 per doctor plus 1 per 2 employees
Mortuaries, funeral parlors	1 per 3 chapel seats plus 1 per funeral vehicle
Churches, theaters, auditoriums, assembly halls, meeting rooms, community centers, libraries, civic clubs, museums, stadiums, outdoor sports arenas	1 per 4 seats plus 1 per 3 employees
Bowling alleys	5 per alley plus 1 per 3 employees
Office and public administration buildings, neighborhood shopping centers, retail establishments, not listed elsewhere	1 per 200 square feet of usable floor area planned
Restaurants, night clubs, bars	1 per 4 seats or 1 per 100 bar square feet of usable floor area (whichever is greater) plus 1 per 3 employees
Filling stations, beauty shops, barber shops	1 per service bay or service chair plus 1 per 2 employees
Banks, savings and loan agencies	2 per teller window plus 1 per 2 employees
Primary and middle schools, and wholesale, industrial, manufacturing establishments	1 per 2 employees
High schools, trade schools	1 per 10 students plus 1 per employee
Drive-in food or drink places where food is consumed on the premises	1 per 150 square feet of usable floor area plus 1 per 3 employees
Furniture and appliance household equipment services	1 per 500 square feet of usable floor area for the first 5,000 square feet; thereafter, 1 per 1,000 square feet of usable floor area
Auto and machinery repair shops	2 per service bay plus 1 per employee
Outdoor sales areas	1 per 200 square feet of site display space and customer circulation area
Recreation, outdoor, except as provided elsewhere	1 per 200 square feet of site where customers circulate, participate in, or watch recreation
Racquetball, handball, squash and tennis courts	2 per court
Golf Courses	5 per hole
Roller skating rinks	1 per 150 square feet of usable floor area and 1 per 3 employees
Miniature golf courses	1 per hole
Manufactured home, new car sales, used car sales (added by Ordinance No. 431)	1 per 100 square feet of sales building



7.G.vii Parking Lot Placement Regulations

Setback from a Street - Where a parking lot abuts a residential land use category areas across a street, a three-foot opaque obstruction to the lights from the parking automobiles must be provided between the parking lot and the street line. This may be by the use of a masonry wall or earth berm or depressed grade or any other method that achieves the same purpose. Where a parking lot abuts a residential land use category area on the same side of a street and in the same block, no part of the parking lot shall be closer to the street line than the minimum required front setback for residential properties in the same block. Regardless of the land use category in which it is located, every part of a parking lot shall be set back from every lot line a sufficient distance to insure that no part of any parked vehicle will project over any lot line.

Setback from an Interior Lot Line - Where a parking lot abuts a residential land use category area along its interior side lot line, and is not separated there from by an alley, no part of the parking lot shall be closer than three (3) feet to said lot line.

Rear Setback - Where a parking lot abuts a residential land use category area along its rear lot line and is not separated there from by an alley, no part of the parking lot shall be closer than three (3) feet to said lot line. Where the rear lot line is contiguous to an alley, no set back is required.

Access to Parking from an Alley - Any parking lot may use an abutting alley for direct access to parking spaces; provided that the full width of the alley is dedicated to the public and fully improved with a hard, all-weather, dust-free surface, properly drained to prevent impoundment of surface water.

Access to Parking from a Street - Access to a parking lot from a street shall be limited to driveways and there shall be no direct access to any off-street parking space from a street.

Ingress and Egress - no entrance or exit to a parking lot shall be located closer to an abutting residential land use category area than fifteen (15) feet.

Lanes and Aisles - Lanes and aisles in parking lots shall be as follows:

- Between two rows of parking spaces oriented perpendicular to the lane or aisle, the minimum width of the lane or aisle shall be twenty-four (24) feet.
- Between two rows of angled parking, the minimum width of the lane or aisle shall be twenty (20) feet.
- Between one row of perpendicular parking and one row of angled parking, the minimum width of the lane or aisle shall be twenty (20) feet.
- Between one row of perpendicular parking and a curb, building, or other structure, the minimum width of the lane or aisle shall be twenty (20) feet.
- Between one row of angled parking and a curb, building or other structure, the width of the lane or aisle shall be twenty (20) feet.

7.G.viii Required Improvements and Maintenance



Surfacing and Drainage - Every parking lot shall be paved with asphaltic concrete or Portland Cement Concrete, or a durable chip and seal that meets City standards and properly drained to prevent impoundment of surface water. Every parking lot shall be subject to approval by the Street Superintendent and parking lots approved for a chip and seal finish shall conform to the requirements provided for in Section 301, subgrade preparation, and Section 330, chip and seal, (2 applications) of the Uniform Standard Specifications for Public Works Construction, sponsored by the Maricopa Association of Governments, commonly referred to as the MAG Spec's. Existing parking lots may be granted an annual exception by the Zoning Administrator, provided that the lot is stabilized and maintained to acceptable standards so that neither a hazard nor nuisance is created.

Screening - Where the interior side lot line or rear lot line of a parking lot, located in business or industrial land use category area, abuts a residential land use category area and is not separated therefrom by an alley, a solid, unpierced, masonry screen wall not less than five (5) feet in height above grade shall be erected abutting the lot line; provided, however, that in no case shall a screen wall extend closer to a street line than the minimum required setback for residential properties in the same block.

Landscaping - The area between the street line and the parking lot shall be suitably landscaped and maintained by the owner or operator of the parking lot.

Lighting - Parking lots used during hours of darkness shall be lighted. The overall height of lighting fixtures shall not exceed twenty-seven (27) feet above grade, including base, and fixtures shall be so constructed and arranged to reflect light away from any adjacent residential land use category area. Lighting less than thirteen (13) feet and six (6) inches will be protected against vehicular and pedestrian traffic.

Any parking lot existing at the effective date of these regulations shall, within one (1) year from said date, be brought into conformance with all provisions of this section of these regulations.

7.G.ix Off-Street Loading Requirements

In all land use categories, for every building or part thereof, erected or enlarged after the effective date of these regulations, which is occupied or to be occupied by a manufacturing plant, storage warehouse, wholesale establishment, retail establishment, freight terminal, hospital, laundry, dry cleaning, mortuary, or similar use requiring receipt or distribution of materials or merchandise by motor truck, there shall be provided and maintained, on the same premises as the building or use, adequate off-street loading space meeting the minimum requirements hereinafter specified. Loading space as hereinafter required shall not be considered as satisfying requirements for off-street parking space.



Schedule of Loading Space Requirements - Total Floor Area of Number of Loading Spaces	
Building	Required
1,000-10,000 square feet	1
10,000-30,000 square feet	2
30,000-50,000 square feet	3
For each additional 100,000 square feet	1 additional

Location of Loading Space - Required off-street loading space may occupy all or any part of a required rear yard, except as provided elsewhere in these regulations, and may be partially or entirely enclosed within a building. Where a side yard abuts an alley in a non-residential land use category, loading space may be located in that side yard.

Use of Alley for Maneuvering Space - Where a building or use in a non-residential land use category requiring off-street loading space abuts an alley, such alley may be used for maneuvering space for loading and unloading spaces; providing, however, that no alley abutting any residential land use category may be so used.

Measurement of Loading Space - Every required off-street loading space shall have a minimum width of twelve (12) feet, a minimum length of forty-five (45) feet and a minimum height of fourteen (14) feet, exclusive of access aisles and maneuvering space.

7.G.x Plans Required for Off-Street Parking and Loading Spaces

Plans shall be submitted to and approved by the Zoning Inspector showing how the required parking and loading spaces are to be arranged in the area provided for the purpose. Such plans shall show access streets, alleys and drives, location of all points of ingress and egress, parking spaces, loading spaces, aisles and maneuvering space, and location and design of all screen walls, landscaping and lighting. Before issuance of a Zoning Compliance Certificate, the Zoning Inspector may obtain the approval of the Public Works Director.



8. CMP Compliance

8.A Regulatory Structure

The City has adopted various codes, ordinances, resolutions, rules, regulations, plans and policies (collectively, the “Rules”). Except as stated in this Final CMP, the Rules in effect at the time this Final CMP is submitted shall be the Rules that apply to development of the Project. In the event of a conflict between the Rules and this Final CMP, the Final CMP shall control. The Rules as described and modified herein are applicable to the Villages at Vigneto for reliance purposes. All Rules adopted by the City of Benson, not modified by this or any section in this Final CMP, still apply to the Development, The Villages at Vigneto.

8.A.i Zoning Regulations

This Final CMP addresses each Section of the City’s Zoning Regulations, as it applies to the Project, as follows:

Section One – Definitions: For ease of reference, the definitions contained in the City’s Zoning Regulations in effect as of the date of this Final CMP, as amended by this Final CMP, are set forth in Appendix B. These definitions shall be utilized when interpreting the Final CMP unless an alternative definition is provided elsewhere in the text of the Final CMP, in which case, the definitions contained in the text of the Final CMP shall apply.

Section Two – Provisions: This section has been incorporated into Section 7 of the Final CMP.

Section Two A – Conditional Uses: For ease of reference, the Conditional Use provisions in Section Two A, as amended by this Final CMP, are set forth in Section 7.D of the Final CMP.

Section Three – Site Plan Required: For ease of reference, the site plan provisions in Section Three of the Zoning Regulations, as supplemented by this Final CMP, are set forth in Section 3.E of the Final CMP.

Section Three A – Community Master Plan Approval: Section Three A of the Zoning Regulations remains in full force and effect and applicable to the Project.

Section Four – Establishment of Zoning Districts: Section Four of the Zoning Regulations remains in full force and effect and applicable to the Project.

Section Five – R-1 Districts: This section does not apply to the Project.

Section Six – R-2 Residential Districts: This section does not apply to the Project.

Section Seven – R-3 Residential Districts: Pursuant to Section Three A of the Zoning Regulations, this Final CMP specifies alternative development methods and standards than provided in the underlying zoning district. Thus, this section does not apply to the project because alternative development methods govern development within the Project and the permitted uses for the R-



3 district are incorporated into Section 5 of the Final CMP.

Section Seven A – Rural Transitional: This section does not apply to the Project.

Section Eight – B-1 Neighborhood Business District: This section does not apply to the Project.

Section Nine – B-2 General Business District: Pursuant to Section Three A of the Zoning Regulations, this Final CMP specifies alternative development methods and standards other than provided in the underlying zoning district. Thus, this section does not apply to the Project because alternative development methods govern development within the Project and because the uses permitted in the B-2 General Business District are established in this Final CMP and are consistent with Section Nine.

Section Ten – I-1 Light Industry District: Pursuant to Section Three A of the Zoning Regulations, this Final CMP specifies alternative development methods and standards other than provided in the underlying zoning district. Thus, this section does not apply to the Project because alternative development methods govern development within the Project and because the uses permitted in the B-2 General Business District are established in this Final CMP and are consistent with Section Ten.

Section Eleven – I-2 Heavy Industry Districts: This section does not apply to the Project.

Section Twelve – Supplemental Regulations: For ease of reference, the Supplemental Regulations contained in Section Twelve of the Zoning Regulations, as amended by this Final CMP, are set forth in Section 7 of the Final CMP.

Section Thirteen – Keeping of Livestock and Pets: For ease of reference, the Keeping of Livestock and Pets regulations contained in Section Thirteen of the Zoning Regulations, as amended by this Final CMP, are set forth in Section 7 of the Final CMP.

Section Fourteen – Off-Street Parking and Loading Regulations: For ease of reference, the off-street parking and loading regulations in Section Fourteen of the Zoning Regulations, as amended by this Final CMP, are set forth in Section 7 of the Final CMP.

Section Fifteen – Sign Regulations: For ease of reference, the sign regulations in Section Fifteen of the Zoning Regulations, as modified as to applicable land use categories in this Final CMP, are set forth in Section 5 of the Final CMP.

Section Sixteen – Manufactured Home Parks: This section does not apply to the Project because manufactured homes are prohibited in the Project.

Section Sixteen A – Recreational Vehicle Parks: For ease of reference, the Recreational Vehicle Parks provisions in Section Sixteen A, as amended by this Final CMP, are set forth in Section 7 of the Final CMP.

Section Seventeen – Outdoor Lighting Regulations: For ease of reference, the outdoor lighting regulations in Section Seventeen of the Zoning Regulations, as supplemented by this Final CMP, are set forth in Section 6 of this Final CMP.



Section Eighteen – Non-Conforming Use: Section Eighteen of the Zoning Regulations remains in full force and effect and applicable to the Project.

Section Nineteen – Amendments: Section Nineteen of the Zoning Regulations remains in full force and effect and applicable to the Project.

Section Twenty – Administration and Enforcement: Section Twenty of the Zoning Regulations remains in full force and effect and applicable to the Project.

Section Twenty A – Violations of These Regulations: Section Twenty A of the Zoning Regulations remains in full force and effect and applicable to the Project.

Section Twenty-One – Board of Adjustment: Section Twenty-One of the Zoning Regulations remains in full force and effect and applicable to the Project.

Section Twenty-Two – Severability Clause: Section Twenty-Two of the Zoning Regulations remains in full force and effect and applicable to the Project.

Section Twenty-Three – Repeal of Conflicting Ordinances: Section Twenty-Three of the Zoning Regulations remains in full force and effect and applicable to the Project.

Section Twenty-Four – Historic Preservation Ordinance: Section Twenty-Four of the Zoning Regulations remains in full force and effect and applicable to the Project.

Section Twenty-Five – Citizen Review Process: Section Twenty-Five of the Zoning Regulations remains in full force and effect and applicable to the Project.

Regarding the Sections of the Zoning Regulations that remain in effect and the Sections of the Zoning Regulations in which amendments have been made, references in those Sections of the “Ordinance,” “Zoning Ordinance,” “Regulation(s),” or “Zoning Regulation” (regardless of whether the reference is in upper case or lower case) shall be references to this Final CMP where the context requires, and in the event of a specific conflict between this Final CMP and the City’s Zoning Regulations, this Final CMP shall control.

8.A.ii Building Codes – (ICC 2006 Standards)

The following adopted Building Codes apply to development of the Project and are hereby made part of the Final CMP:

INTERNATIONAL BUILDING CODE, 2006 edition, published by the International Code Council and amended by the City of Benson as of the date of this Final CMP.

INTERNATIONAL RESIDENTIAL CODE, 2006 edition, published by the International Code Council and amended by the City of Benson as of the date of this Final CMP.



INTERNATIONAL MECHANICAL CODE, 2006 edition, published by the International Code Council and amended by the City of Benson as of the date of this Final CMP.

INTERNATIONAL PLUMBING CODE, 2006 edition, published by the International Code Council and amended by the City of Benson in a document entitled “Amendments to the Uniform Plumbing Code - Standards for Low Flow Plumbing Fixtures”.

INTERNATIONAL FUEL GAS CODE, 2006 edition, published by the International Code Council and amended by the City of Benson as of the date of this Final CMP.

INTERNATIONAL FIRE CODE, 2006 edition, published by the International Code Council and amended by the City of Benson as of the date of this Final CMP.

INTERNATIONAL ENERGY CONSERVATION CODE, 2006 edition, published by the International Code Council and amended by the City of Benson as of the date of this Final CMP.

INTERNATIONAL EXISTING BUILDING CODE, 2006 edition, published by the International Code Council and amended by the City of Benson as of the date of this Final CMP.

INTERNATIONAL CODE COUNCIL ELECTRICAL CODE – ADMINISTRATIVE PROVISIONS

NATIONAL ELECTRICAL CODE, 2005 edition, published by the National Fire Protection Association, as amended by the City of Benson as of the date of this Final CMP.

UNIFORM CODE FOR THE ABATEMENT OF DANGEROUS BUILDINGS, 1997 edition, published by the International Conference of Building Officials.

Future Updates – Future updates and/or amendments to the codes listed above will apply to the Project, provided that such code updates and/or amendments have been duly adopted by the appropriate publishing agency and the City and are reasonably applied, and unless mandated by superior legal authority, will not apply to any structures for which a permit already has been issued.

8.A.iii Engineering Design Standards

The engineering design standards applicable to the Project are those standards described in Section 4 of this Final CMP.

8.A.iv Subdivision Development Standards

The subdivision development standards applicable to the Project are those standards described in this Final CMP; subdivision plats and site plans will be processed pursuant to Section 3 of this Final CMP.



9. Summary

The Villages at Vigneto is a dynamic, world-class master planned community. Vigneto is a place that integrates the natural environment with the modern world to encourage its residents to get out, interact, participate, be entertained, and enjoy the year round climate and culture of the City of Benson.

El Dorado has worked diligently to create a design that will gently weave the natural features of the region with timeless architectural and landscape design. The Developer relied on both its own history of successes creating livable communities, as well as delving into historical and environmental details of the Project's property to create a comprehensive direction for the life of the Development.



Illustration 16 - Blending the natural features of the region with architectural and landscape design elements

This Project will demonstrate how a properly designed community and the natural environment can coexist and benefit one another. A large team of some of the industry's best professionals spent years planning The Villages at Vigneto. The planning philosophy provides the Developer the

opportunity to not only manage broad consistency and compliance with the CMP, but also consider every detail necessary to ensure the Project is developed in a proper and responsible manner.



The Villages at Vigneto will generate over 16,000 jobs during the build-out and almost 9,000 will remain after construction ends. It will also bring an unprecedented \$24 billion in spending and sales, and almost \$8 billion in household earnings to Cochise County. Vigneto will sustain \$1.2 billion in annual economic activity after the Project is complete. Also, local municipalities will receive almost \$2 billion in tax revenues as a result of the Project. It will have such a positive impact on the region that the Southeastern Arizona Governments Organization (“SEAGO”) recently issued a resolution to formally back the Villages at Vigneto. The resolution highlighted El Dorado’s responsible planning and the economic impact Vigneto will have on the region.

Throughout the planning and design process, El Dorado has met or exceeded the requirements laid out in the General Development Plan for a dynamic, world-class master planned community. The Developer has also carefully followed the City of Benson guidelines for the creation of a Final CMP application. As a result of this extensive work, the Developer is pleased to submit this Final CMP application to the City of Benson for its review and approval.



Appendix A: Definitions

DEFINITIONS

For ease of reference, the definitions contained in the City's Zoning Code in effect as of the date of this Final CMP, as amended by this Final CMP, are set forth below. These definitions shall be utilized when interpreting the Final CMP unless an alternative definition is provided elsewhere in the text of the Final CMP, in which case, the definitions contained in the text of the Final CMP shall apply.

The word person includes a firm, association, organizations, partnership, trust, company, or corporation as well as an individual.

The word shall is mandatory and the word may is permissive.

The word building includes the word structure.

The words used or occupied includes the words intended, designed, or arranged to be used or occupied.

When not inconsistent with the context, the present tense includes the future tense; the singular number includes the plural; and the plural number includes the singular.

All words and terms shall be interpreted according to their common usage unless otherwise defined.

Accessory Building - A detached building on the same lot with, and of a nature customarily incidental and subordinate to, the principal building. An accessory building attached to the main building shall be considered to be a part of the main building and shall maintain any yards required for a main building.

Accessory Use - A use on the same lot with, and of a nature customarily incidental and subordinate to, the principal use.

Acre - An area comprising forty-three thousand, five hundred, sixty (43,560) square feet.

Adult Uses - Any of the following activities are to be adult uses when offered by an establishment.

(i) Any activity that offers live, transmitted, or recorded entertainment where patrons can see specified anatomical areas. Such activity may feature dancers, go-go dancers, exotic dancers, strippers, or other similar entertainers. (ii) Any activity where the principal use is characterized by the sale or distribution of merchandise with a predominant emphasis on the display, depiction, description, or relation to sexual activities or specified anatomical areas. Principal use in this context shall include any amount of merchandise (sales) over ten percent (10%) of the establishment's total sales. Merchandise shall include, but is not limited to, motion pictures, cassettes, films, books, magazines, posters, cards, pictures, periodicals, instruments, devices, equipment, paraphernalia, or other similar products. Specified anatomical areas shall include: (i) less than completely and opaquely covered (a) human genitals or pubic regions; (b) buttocks; or (c) female breasts below a point immediately above the top of the areola; and (d) Human male



genitals in a discernibly turgid state, even if completely and opaquely covered.

Alley - A way dedicated and open to the public, which affords a secondary means of, access to the back or side properties otherwise abutting on a street.

Amendment - A change in the wording context, or substance of these regulations, an addition or deletion, or a change in the zoning district boundaries or classifications upon the official zoning map, which imposes any regulation not heretofore imposed or removes or modifies any such regulation theretofore imposed.

Amendment, Major - An amendment to the Final CMP that would: (i) increase the Dwelling Unit Cap; (ii) provides arterial street intersections along the exterior boundary of the Project at locations other than generally presented in the CMP; (iii) change permitted land uses; (iv) provides densities and intensities not included in the Final CMP; (v) reduces the usable open space below 20% of the total Project gross acreage; (vi) as a consequence of more than one Minor Amendment submitted concurrently, the cumulative results materially change the objectives or goals of the Final CMP; or (vii) results in a significant change in pedestrian or traffic circulation along the exterior boundary of the Project at locations other than generally presented in the CMP.

Amendment, Minor - An amendment to the Final CMP is an amendment that is not a Major Amendment, and includes: (i) transfers of density or lots from one Planning Unit to another; or (ii) changes development standards, so long as said changes does not alter the impacted development standard by greater than 15%.

Amphitheater - an outdoor area with tiers of seats around an open area used for public contests, games, performances, exhibitions, and the like.

Automobile Graveyard - Any establishment or place of business maintained, used or operated for storing, keeping, buying or selling wrecked, abandoned, scrapped, ruined or dismantled motor vehicles or motor vehicle parts.

Broadcast Studio - An establishment containing one or more broadcasting studio for over-the-air, cable or satellite delivery of radio or television programs, or studios for the audio or video recording or filming of musical performances, radio or television programs or motion pictures. This term does NOT include a transmission tower.

Buildable Area - That net portion of the lot remaining after deducting all required yards from the gross area of a lot.

Building - A structure having a roof supported by columns or walls for housing, shelter or enclosure of persons, animals, chattels or property of any kinds.

Building Height - The vertical distance of a building as measured from the finished grade to the highest point of the roof.

Carport - An accessory building or portion of a principal building with two (2) or more open sides designated or used for the parking of motor vehicles. Enclosed storage facilities may be provided as part of a carport.



City Code - The City Code of the City of Benson, effective December 18, 2002.

Commission - Benson Planning and Zoning Commission.

Common Area - Natural-area open space, floodways, drainageways, arroyos, paths and trails, golf courses, active and passive parks, view corridors, and other private recreation areas owned and maintained by an HOA and/or publically dedicated property owned and maintained by a District.

Conditional Use - A use not expressly permitted in a land use category that may locate in a land use categories provided it will not be detrimental to the public good nor impair the integrity and character of the land use category, and will be suitable to the community at large.

Council - The elected governing body of Benson.

Cut - The land surface, which is shaped through the removal of soil, rock, or other materials.

District - A community facilities district, a revitalization district, or any other special financing district that owns public infrastructure within the Project.

Disturbed Area - Those areas of natural ground that has been or is proposed to be altered through grading cut and fill, removal of natural vegetation, placement of material, trenching, or by any means that causes a change in the undisturbed natural surface of the land or natural vegetation.

Dwelling - Any building or portion thereof, which is designed or used exclusively for residential purposes.

Dwelling Unit, Single Family - A detached residence designed for occupancy by one (1) household only. This shall include manufactured homes when placed on a permanent foundation, converted to real property, and taxed as a site-built dwelling as provided by law.

Dwelling Unit, Multiple Family - A building, or portion thereof, designed for occupancy by two (2) or more households living independently of each other, with the units completely separated by a common wall, floor, and/or ceiling.

Dwelling Unit - One (1) or more rooms designed for occupancy by one (1) household for living purposes and having its own cooking and sanitary facilities.

Factory-Built Structure - Any structure that is wholly, or in substantial part, made, fabricated, formed, or assembled in manufacturing facilities for installation or assembly and installation on a building site.

Factory-Built Housing - A factory-built structure designed for long-term residential use. For the purposes of these regulations, factory-built housing consists of three (3) types: modular homes, mobile homes, and manufactured homes.

Feedlot - A feeding operation on a parcel of land where livestock are kept or exchanged in corrals or yards on a sustained basis and where feed is brought to the yard. It is operated for the purpose of accommodating the needs of others in whole or in part for a fee or fees paid to the operator or owner for the accommodations, materials, and services received.



Fence - A structure built to separate two parcels of land or to separate a parcel of land into different use areas.

Fertilizer Plant - A place where animal matter is collected, processed or stored on a commercial basis, excluding sewage treatment plants.

Fill - The deposit of soil, rock, or other materials placed by man.

Finished Grade - The final grade and elevation of the ground surface after grading is completed.

Floor Area - The sum of the gross horizontal areas of every floor, of all buildings on the lot measured from the exterior walls or from the center line of walls separating the buildings, including basement floor area, elevator shaft and stairwells at each floor, floor space used for mechanical equipment, penthouse, attic space whether or not a floor has been actually laid and having headroom of seven (7) feet or more, interior balconies and mezzanines, and roofed porches, but not including any space devoted to parking, or to loading and unloading.

Garage - An accessory building or portion of the principal building designed or used for the shelter or storage of self-propelled vehicles owned or operated by the occupants of the principal building.

Grade, Natural - The average elevation of the finished ground surface adjacent to the exterior walls of a building.

Grading - Any excavating, filling, or combination thereof, including conditions resulting from excavation or fill.

Guest House - An attached or detached building used for dwelling purposes situated on the same lot as a primary residence. A Guest house is not considered a dwelling unit for density purposes unless an oven or stove is included in the guest house.

Home Owners Association (HOA) - One or more homeowners associations that are formed, among other reasons, to own and maintain Common Area.

Home Occupation - An activity carried on by the occupant of a dwelling as a secondary use, including professional and semi-professional offices when conducted and entered from within the dwelling, in connection with which there is no public display of stock-in-trade upon the premises, not more than one (1) non-resident of the premises is employed and not more than one-fourth (1/4) of the floor area of one story of the principal building, or a detached home workshop of not more than two hundred (200) square feet in area is used for such home occupation; and provided that the residential character of the dwelling is not changed by said use and that such occupation does not cause any sustained changes by said use and that such occupation does not cause any sustained or unpleasant or unusual noises, vibrations, noxious fumes, odors, or cause any parking or traffic congestion in the immediate neighborhood.



Hotel/Motel - A building, or group of buildings, used primarily for occupancy by transients or as a residence for periods of less than one year. A hotel/motel shall contain rooms and/or units and shall provide customary services found at a hotel/motel, to the occupants of those rooms and/or units. Hotel/motel uses shall be classified within the Land Use Budget as Commercial/Mixed Use and shall not count against the resort room allocation nor the residential dwelling unit allocation for the Property.

Household - An individual or two (2) or more persons related by blood, marriage or adoption and usual servants living together as a single housekeeping unit in a dwelling unit or a group of not more than five (5) persons who need not be related, living together as a single housekeeping unit in a dwelling unit.

Junk - Old or scrap copper, brass, rope, rags, batteries, paper, trash, rubber debris, waste, or junked, dismantled or wrecked automobiles or parts thereof, iron, steel, and other old or scrap ferrous or nonferrous material.

Junkyard - Any establishment or place of business maintained, used, or operated for storing, keeping, buying, or selling junk, or for maintenance or operation of an automobile graveyard, and including garbage dumps sanitary landfills.

Landscaping - The application or use of some combination of planted trees, shrubs, vines, ground cover, flowers or lawns. In addition, the combination may include rocks, and such structural features as fountains, pools, art works, screens, walls, fences, or benches.

Lots - A legally created parcel of land under one (1) ownership of sufficient size to meet minimum zoning requirements for use, coverage and area, and to provide such yards and other open spaces as are required by these regulations.

Lot, Area - The total horizontal area within the property lines of a lot, including land over which easements have been granted, but not including any land within the limits of a street or alley upon which the lot abuts.

Lot, Corner - A lot located at the intersection of two (2) or more streets. A lot abutting on a curved street or streets shall be considered a corner lot if straight lines drawn from the foremost points of the side lot lines to the foremost points of the lot meet at an interior angle of less than one hundred thirty-five (135) degrees.

Lot Coverage - The total structural coverage provided on a lot or site, inclusive of all roofed areas or structures capable of supporting a roof divided by the net area of the lot or parcel. The first three feet of roof overhang or projection shall not be included in the lot coverage.

Lot Depth - The distance between the midpoints of straight lines connecting the foremost points of the side lot lines in front and the rearmost points of the side lot lines in the rear.

Lot, Flag - A lot which has access to a road or street by means of a narrow strip of lot or easement.

Lot, Interior - A lot other than a corner lot or a key lot.

Lot, Key - Any lot, one side line of which is contiguous to the rear line of a corner lot.

Lot, Through - A lot abutting two parallel or approximately parallel streets.



Lot, Lines - The lines bounding a lot.

Lot Line, Front - The front lot line of a lot shall be determined as follows:

a. **Corner Lot** - The front lot line of a corner lot shall be the shorter of the two lines adjacent to the streets as platted, subdivided, or laid out. Where the lines are equal, the front line shall be that line which is obviously the front by reason of the prevailing custom of the other buildings on the block. If such front is not evident, then either may be considered the front of the lot, but not both. Notwithstanding, the longer dimension may be deemed the front if the intent of such is evident by convention of the community's designed or platted lotting configuration ("wide/shallow").

b. **Interior Lot** - The front lot line of an interior lot shall be the line bounding the street frontage.

c. **Through Lot** - The front lot line of a through lot shall be that line which is obviously the front by reason of the prevailing custom of the other buildings in the block. Where such front lot line is not obviously evident, the Planning Director shall determine the front lot line. Such a lot over two hundred (200) feet deep shall be considered, for the purpose of this definition, as two lots, each with its own frontage.

Lot Line, Rear - That lot line opposite to the front lot line. Where the side lot lines meet in a point, the rear lot line shall be assumed to be a line not less than ten (10) feet long, lying within the lot and parallel to the front lot line. In the event that the front lot line is a curved line, then the rear lot line shall be assumed to be a line not less than ten (10) feet long, lying within the lot and parallel to a line tangent to the front lot line at its midpoint.

Lot line, Side - The boundary of a lot which is not a front line or a rear lot line.

Lot of Record - A lot which is a part of a subdivision, the plat of which has been recorded in the office of the Cochise County Recorder; or a lot, parcel or tract of land described by metes and bounds, the deed of which has been recorded in the office of the Cochise County Recorder.

Lot Width - The width of the lot shall be: (i) if the side lot lines are parallel, the shortest distance between these sidelines; (ii) if the side lot lines are not parallel, the width of the lot shall be the length of a line at right angles to the axis of the lot at a distance equal to the front setback required for the area in which the lot is located. The axis of a lot shall be a line joining the midpoints of the front and rear lot lines.

Low Speed Vehicle or "LSV" - Any 4-wheeled motor vehicle whose top speed is greater than 20 miles per hour, but not greater than 25 miles per hour. LSVs include neighborhood electric vehicles (as defined by Arizona Revised Statutes Section 28-101(39)) and golf carts (as defined by Arizona Revised Statutes Section 28-101(26)) whose speed is not greater than 25 miles per hour.



Manufactured Home - A factory-built structure that is manufactured or constructed under the authority of 42 United State Code Section 5401 and is to be used as a place for human habitation, but which is not constructed or equipped with a permanent hitch or other device allowing it to be moved other than for the purpose of moving to a permanent site, and which does not have permanently attached to its body or frame any wheels or axles. A mobile home is not a manufactured home, except as hereinafter provided.

Mobile Home - A transportable, factory-built home, designed to be used as a year-round residential dwelling and built prior to enactment of the Federal Manufactured Housing Construction and Safety Standards Act of 1974, which became effective June 15, 1976. In many cases, mobile homes were built to a voluntary industry standard of the American National Standards Institute (ANSI)-A119.1 Standards for Mobile Homes.

Manufactured Home Park - A parcel of land under single ownership on which three or more mobile and/or manufactured homes are occupied as residences, regardless of whether or not a charge is made for such accommodations.

Mobile Home Space - A plot of ground within a mobile home park designed for the accommodation of one (1) mobile home or recreational vehicle together with its accessory structures.

Mobile Home Subdivision - A subdivision designed and intended for sale, lots, for residential occupancy in mobile homes.

Modular Home - Factory-built housing certified as meeting the local or State Building code as applicable to modular housing. Once certified by the state, modular homes shall be subject to the same standards as site-built homes.

Multi-Modal Pathway - A pathway designed to accommodate LSVs, bicycles, and pedestrian travel. Multi-modal pathways will have a minimum width of 16 feet and will be located adjacent to one side of most arterial roadways, within portions of the Community Multi-Use Corridor and potentially other appropriate locations as determined with each Planning Unit Plan. These pathways will utilize underpasses when crossing arterial roadways. Collector crossings will be at-grade and offset from arterial street intersections to reduce conflict with vehicular traffic.

Multi-Use Lanes - Multi-use lanes will be designed to accommodate LSV and bicycle travel. Multi-use Lanes will have a minimum width of 7 feet from face of curb to center of striped lane and will be located within the pavement area of all collector roadways.

Net Area - The area included within lot or parcel lines after all right-of-way dedications have been made.

Non-Conforming Building - A building, structure, or portion thereof, which does not conform to the requirements of these regulations applicable to the zoning districts in which such building is situated, but which legally existed prior to the effective date of these regulations.

Non-Conforming Lot - A lot of record or parcel of land having less area, frontage or dimensions that required by these regulations for the zoning district in which it is located, but which was lawfully established and recorded prior to the effective date of these regulations.



Non-Conforming Use - A use of a building or parcel of land which does not conform to the requirements of these regulations but which lawfully existed prior to the effective date of these regulations.

Nursery School - A public or private school or kindergarten providing day care and/or education to five (5) or more children six (6) years old or under.

Outdoor Theater - An open-air theater designed for viewing by the audience from motor vehicles.

Parking Garage - An enclosed building used for parking, storage, or rental of motor vehicles.

Permitted Area - The approximate 8,212 acres of the total 12,167 acre Project to which the 404 Permit applies as issued by the Army Corps of Engineers.

Permitted Use - A use specifically permitted or a use analogous to those specifically permitted.

Planning Director - A Person designated by the City Manager as having the primary responsibility for administering and enforcing the Final CMP. The Planning Director may also be referred to throughout the Final CMP or The City of Benson Zoning Regulations as the “Community Development Director”. The terms are interchangeable and refer to the same position/person.

Planning Unit - An area of land within the Final CMP that is the subject of more specific planning. Exhibit 6 identifies 14 Planning Units.

Planning Unit Plan or “PUP” - The complete plan submittal for each Planning Unit, which will include the information required in Section 3.

Planning Unit Master Plan or “PUMP” - Each of the Potable Water, Sewer, Reclaimed Water, Drainage, and Traffic Circulation/Transportation Planning Unit Master Plans, all of which are required elements of the PUP.

Prohibited Use - A use specifically prohibited or a use analogous to those specifically prohibited.

Railroad - Includes the land used for general railroad purposes, including mainline and switching trackage, repair shops, stations, communications equipment, roundhouses and storage facilities, but not including railroad equipment (miniature or otherwise) operated by this owner as a hobby or as part of the equipment of an amusement resort.

Recreational Vehicle (RV) - A movable or portable dwelling unit fifty (450) feet or less in length and eight (8) feet or less in width, built on a chassis, designed primarily for temporary living quarters for recreational or travel use, which either has its own motive power or is mounted on or drawn by another vehicle.

Resort - A building or a group of buildings containing guest rooms providing recreation activities such as golf, tennis, horseback riding, swimming, or spa related services for guests. A resort may provide services customarily furnished by a hotel including, but not limited to restaurants, bars, and convention facilities. A resort may contain dwelling units (including Timeshare Units) in conjunction with guest rooms.

Retaining Wall - A wall used solely to retain more than eighteen (18) inches of material but not to support or to provide a foundation or wall for a building.



Self-service Station - A space, building or part thereof, arranged or designed to be used for retail sales or supply of motor fuels.

Setback - The shortest distance between the property line and the foundation, wall or main frame of a building or structure.

Social Town Center/Town Square – The Social Town Center/Town Square as it is referred in Section 3 of this Final CMP may also be referred to throughout this Final CMP as the “Town Square” or “Town Center.” These terms are interchangeable throughout the Final CMP.

Spill - To cause or allow earth or other material to fall, flow, or run down a slope, thereby creating a change in the natural appearance and topography.

Story - That portion of a building included between the surface of any floor and the surface of the next floor above, or if there is no floor above, the space between such floor and the ceiling above. A basement shall be considered a story if its ceiling is more than five (5) feet above the average established grade of its perimeter, or if it is used for business purposes by other than janitors or domestic servants in the same building.

Street - A way dedicated to the public, which affords that principal means of access to abutting property.

Street Line - The dividing line between a lot, tract or parcel of land and a contiguous street, the right-of-way line of a street.

Structural Alteration - Any change in the supporting members of a building, such as bearing walls or partitions, columns, beams or girders, or any complete rebuilding of the roof or exterior walls, or which expands the height of area thereof.

Structure - Anything constructed or erected with fixed location on the ground, or attached to something having a fixed location on the ground, including, but not limited to, buildings towers, swimming pools, walls, fences and billboards.

Structure, Temporary - Anything constructed or erected which is readily movable and intended to be used, or used for a period of time not to exceed ninety (90) consecutive days. Such temporary structure shall be subject to all applicable requirements of these regulations for the zoning district in which it is located.

Trail System - An integrated network of Multi-Modal Paths, Multi-Use Lanes, sidewalks, paths, and trails, which links each neighborhood to various Mixed Use and Open Space areas within the Final CMP.

Use - The purpose, for which land or building is occupied or maintained, arranged, designed or intended.

Use, Principal - The main use of land or a building as distinguished from an accessory use.



Variance - A relaxation or waiver of the terms of these regulations where such variance will not be contrary to the public interest and where, owing to conditions peculiar to the property and not the result of the actions of the applicant, a literal enforcement of the regulations would result in unnecessary and undue hardship.

Wall - Any barrier, separate structure, for screening purposes forming a physical barrier, which is so constructed that 100 percent (100%) of the vertical surface shall be closed solid, except for approved gates or other access ways.

Yard - space unoccupied and unobstructed by any structure or portion of a structure from two and one-half (2 1/2) feet above the general level of the graded lot upward, provided, however, that fences and walls may be permitted in any yard subject to height limitations as indicated herein.

Yard, Front - A yard on the same lot with principal building extending across the full width of the lot between the front lot line and the nearest front wall line of the principal building. Any attached carport, porch, or structure, or part thereof, shall be considered as part of the principal building.

Yard Rear - A yard on the same lot with a principal building extending across the full width of the lot between the rear lot line and the nearest rear wall line of the principal building. Any attached carport, porch, or structure, or part thereof, shall be considered as a part of the principal building.

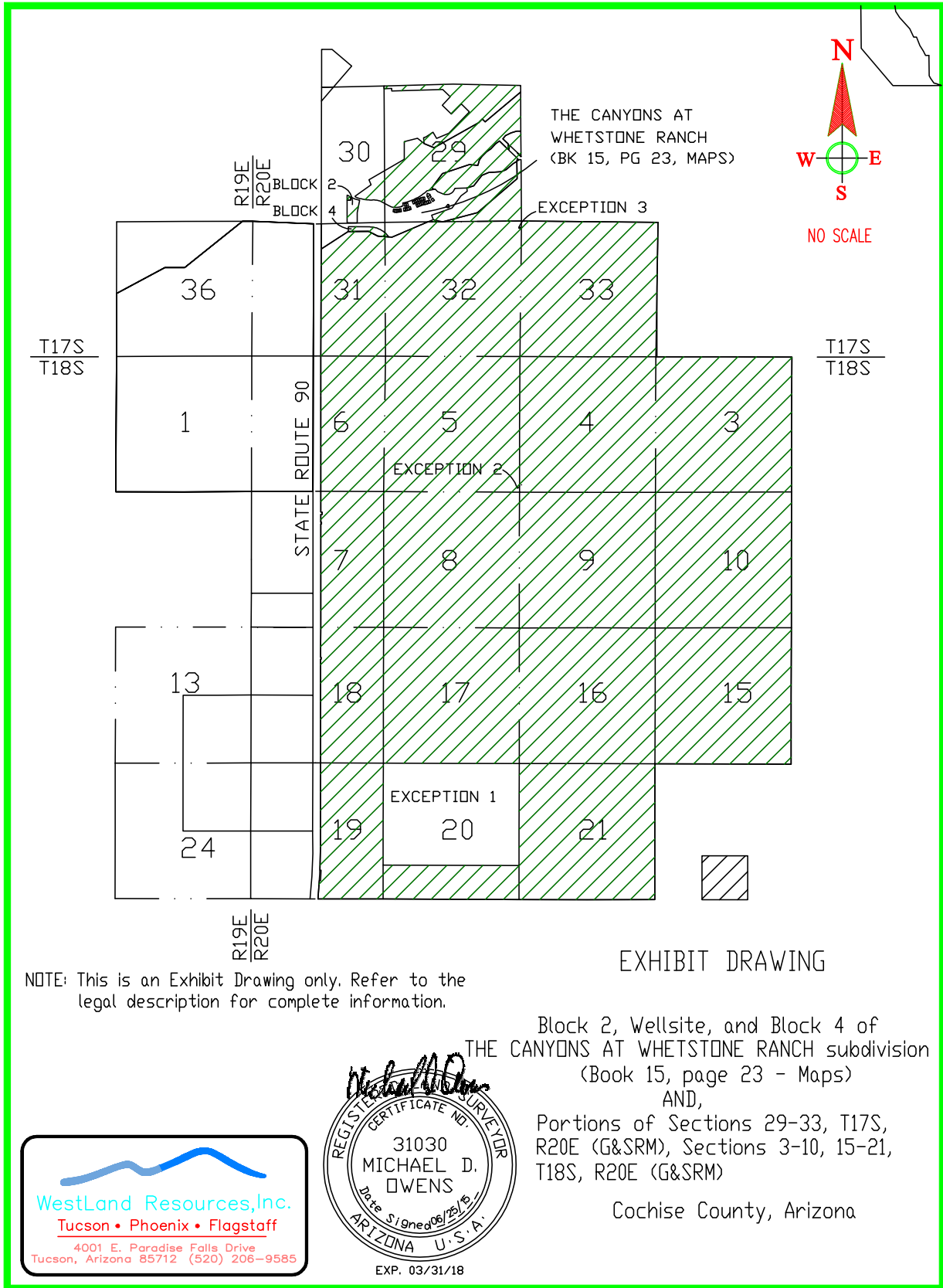
Yard, Required - The minimum open space unoccupied and unobstructed as specified by these regulations for front, rear and side yards, as distinguished from any yard area in excess of the minimum required.

Yard, Side - A yard on the same lot with a principal building extending from the front yard to the rear yard between the side lot line and the nearest side wall line of the principal building. Any attached carport, porch, or structure, or part thereof, shall be considered as a part of the principal building.

Zoning Regulations or City Zoning Regulations - the City of Benson Zoning Regulations, revised as of August 28, 2006.



Appendix B: Legal Descriptions



The Villages at Vigneto
September 8, 2015

Block 2, Well Site abutting Block 2, and Block 4 of THE CANYONS AT WHETSTONE RANCH subdivision, recorded in Book 15 at Page 23, 23A through 23M in the Cochise County Recorder's office, and those portions of Sections 29, 30, 31, 32, and 33, Township 17 South, Range 20 East, Gila and Salt River Meridian, and Sections 3, 4, 5, 6, 7, 8, 9, 10, 15, 16, 17, 18, 19, 20 and 21, Township 18 South, Range 20 East, Gila and Salt River Meridian, all in Cochise County, Arizona described as follows:

BEGINNING at the Northeast corner of said Section 33;

Thence South 00 degrees 54 minutes 17 seconds West, 5242.20 feet along the East line of said Section 33 to the Southeast corner thereof, also being the Northwest corner of said Section 3;

Thence South 89 degrees 56 minutes 45 seconds East, 2645.46 feet along the North line of said Section 3 to the North Quarter corner thereof;

Thence South 89 degrees 58 minutes 54 seconds East, 2654.11 feet along said North line of Section 3 to the Northeast corner of said Section 3;

Thence South 00 degrees 13 minutes 48 seconds West, 2628.45 feet along the East line of said Section 3 to the East Quarter corner thereof;

Thence South 00 degrees 04 minutes 57 seconds West, 2638.43 feet along said East line of Section 3 to the Southeast corner thereof, also being the Northeast corner of said Section 10;

Thence South 00 degrees 07 minutes 46 seconds West, 2647.39 feet along the East line of said Section 10 to the East Quarter corner thereof;

Thence South 00 degrees 04 minutes 18 seconds West, 2644.85 feet along said East line of Section 10 to the Southeast corner thereof, also being the Northeast corner of said Section 15;

Thence South 00 degrees 10 minutes 16 seconds West, 2648.49 feet along the East line of said Section 15 to the East Quarter corner thereof;

Thence South 00 degrees 05 minutes 04 seconds East, 2665.47 feet along the said East line of Section 15 to the Southeast corner thereof;

Thence North 89 degrees 51 minutes 49 seconds West, 2651.95 feet along the South line of said Section 15 to the South Quarter corner thereof;

Thence North 89 degrees 46 minutes 21 seconds West, 2651.73 feet along the said South line of Section 15 to the southwest corner thereof, also being the Northeast corner of said Section 21;

Thence South 00 degrees 06 minutes 13 seconds West, 2647.15 feet along the East line of said Section 21 to the East Quarter corner thereof;

Thence South 00 degrees 05 minutes 02 seconds West, 2649.47 feet along said East line of Section 21 to the Southeast corner thereof;

Thence South 89 degrees 54 minutes 37 seconds West, 2644.96 feet along the South line of said Section 21 to the South Quarter corner thereof;

Thence North 89 degrees 48 minutes 01 seconds West, 2638.89 feet along the said South line of Section 21 to the Southwest corner thereof, also being the Southeast corner of said Section 20;



Thence North 89 degrees 48 minutes 24 seconds West, 5291.23 feet along the South line of said Section 20 to the Southwest corner thereof, also being the Southeast corner of said Section 19;

Thence North 89 degrees 55 minutes 05 seconds West, 2537.60 feet along the South line of said Section 19 to a point of non-tangent curvature on the East right-of-way of State Route 90, from which point the radius point bears North 84 degrees 57 minutes 37 seconds West;

Continue along the said East right-of-way of State Route 90 the following courses;

Thence along a curve to the left, having a radius of 23118.32 feet and a central angle of 001 degrees 46 minutes 55 seconds, 718.98 feet;

Thence South 86 degrees 44 minutes 32 seconds East, 50.00 feet to a point of non-tangent curvature, from which point the radius point bears North 86 degrees 44 minutes 32 seconds West;

Thence along a curve to the left, having a radius of 23168.32 feet and a central angle of 000 degrees 59 minutes 28 seconds, 400.75 feet;

Thence North 87 degrees 44 minutes 00 seconds West, 50.00 feet to a point of non-tangent curvature, from which point the radius point bears North 87 degrees 44 minutes 00 seconds West;

Thence along a curve to the left, having a radius of 23118.32 feet and a central angle of 002 degrees 03 minutes 54 seconds, 833.23 feet to a point of tangency;

Thence North 00 degrees 12 minutes 06 seconds East, 3350.67 feet to the intersection with the line common to said Sections 18 and 19;

Thence North 00 degrees 02 minutes 48 seconds East, 4045.52 feet;

Thence South 89 degrees 57 minutes 12 seconds East, 15.00 feet;

Thence North 00 degrees 02 minutes 48 seconds East, 70.00 feet;

Thence North 89 degrees 57 minutes 12 seconds West, 15.00 feet;

Thence North 00 degrees 02 minutes 48 seconds East, 1171.67 feet to the intersection with the line common to said Sections 7 and 18;

Thence North 00 degrees 02 minutes 13 seconds East, 4028.22 feet;

Thence South 89 degrees 57 minutes 47 seconds East, 25.00 feet;

Thence North 00 degrees 02 minutes 13 seconds East, 60.00 feet;

Thence North 89 degrees 57 minutes 47 seconds West, 25.00 feet;

Thence North 00 degrees 02 minutes 13 seconds East, 311.62 feet;

Thence South 89 degrees 57 minutes 47 seconds East, 50.00 feet;

Thence North 00 degrees 02 minutes 13 seconds East, 90.00 feet;



Thence North 89 degrees 57 minutes 47 seconds West, 50.00 feet;

Thence North 00 degrees 02 minutes 13 seconds East, 808.47 feet to the intersection with the line common to said Sections 6 and 7;

Thence North 00 degrees 02 minutes 49 seconds East, 5277.56 feet to the intersection with the line common to said Sections 6 and 31;

Thence North 00 degrees 11 minutes 49 seconds East, 4167.51 feet;

Thence departing said East right-of-way North 57 degrees 00 minutes 00 seconds East, 1250.67 feet along the southern exterior boundary of THE CANYONS AT WHETSTONE subdivision (Book 15, page 23B - Cochise County records);

Thence North 89 degrees 26 minutes 58 seconds East, 800.00 feet along said exterior line;

Thence South 62 degrees 00 minutes 00 seconds East, 400.00 feet along said exterior line;

Thence South 86 degrees 00 minutes 00 seconds East, 550.00 feet along said exterior line;

Thence North 67 degrees 00 minutes 00 seconds East, 1527.20 feet along said exterior line to the North line of said Section 32;

Thence continue North 67 degrees 00 minutes 00 seconds East, 222.76 feet;

Thence the following courses along the exterior boundary of THE CANYONS AT WHETSTONE subdivision (Book 15, page 23, Cochise County records);

Thence North 19 degrees 00 minutes 00 seconds West, 186.81 feet;

Thence North 71 degrees 00 minutes 00 seconds East, 834.24 feet;

Thence North 36 degrees 00 minutes 56 seconds East, 593.12 feet;

Thence North 54 degrees 10 minutes 41 seconds East, 307.02 feet;

Thence North 06 degrees 30 minutes 54 seconds West, 129.11 feet calculated (North 06 degrees 31 minutes 16 seconds East, 129.10 feet record plat);

Thence South 87 degrees 17 minutes 10 seconds West, 474.99 feet to a point of non-tangent curvature, from which point the radius point bears North 71 degrees 06 minutes 07 seconds West;

Thence along a curve to the right, having a radius of 350.00 feet and a central angle of 094 degrees 44 minutes 07 seconds, 578.70 feet to a point of tangency;

Thence North 66 degrees 22 minutes 03 seconds West, 216.56 feet;

Thence North 44 degrees 37 minutes 46 seconds West, 137.93 feet;

Thence South 77 degrees 28 minutes 12 seconds West, 321.08 feet calculated (321.14 feet record plat) to a point of non-tangent curvature, from which point the radius point bears North 41 degrees 59 minutes 01 seconds West;



Thence along a curve to the right, having a radius of 1975.00 feet and a central angle of 030 degrees 55 minutes 18 seconds, 1065.88 feet calculated (1066.30 record plat);

Thence South 03 degrees 05 minutes 39 seconds East, 120.14 feet;

Thence South 85 degrees 17 minutes 54 seconds West, 54.00 feet (54.02 feet record plat) to a point of non-tangent curvature, from which point the radius point bears South 86 degrees 54 minutes 07 seconds West;

Thence along a curve to the right, having a radius of 25.00 feet and a central angle of 083 degrees 39 minutes 07 seconds, 36.50 feet to a point of tangency;

Thence South 80 degrees 33 minutes 14 seconds West, 118.41 feet to a point of non-tangent curvature, from which point the radius point bears North 09 degrees 26 minutes 44 seconds West;

Thence along a curve to the right, having a radius of 565.00 feet and a central angle of 039 degrees 04 minutes 05 seconds, 385.25 feet to a point of tangency;

Thence North 60 degrees 22 minutes 41 seconds West, 268.45 feet to a point of non-tangent curvature, from which point the radius point bears South 29 degrees 37 minutes 18 seconds West;

Thence along a curve to the left, having a radius of 665.00 feet and a central angle of 032 degrees 12 minutes 41 seconds, 373.86 feet to a point of reverse curvature;

Thence along a curve to the right, having a radius of 1740.00 feet and a central angle of 023 degrees 13 minutes 10 seconds, 705.15 feet to a point on the exterior boundary of THE COTTONWOOD HIGHLANDS subdivision (Book 15, page 25, Cochise County records);

Thence North 21 degrees 04 minutes 11 seconds West, 40.99 feet (41.03 feet record plat) along said exterior boundary of said THE COTTONWOOD HIGHLANDS subdivision;

Thence the following courses along said exterior boundary of said THE COTTONWOOD HIGHLANDS subdivision;

Thence North 54 degrees 28 minutes 47 seconds East, 761.10 feet;

Thence North 24 degrees 42 minutes 22 seconds West, 211.59 feet;

Thence North 60 degrees 00 minutes 00 seconds East, 1596.14 feet;

Thence North 00 degrees 05 minutes 20 seconds West, 694.84 feet;

Thence North 76 degrees 00 minutes 00 seconds East, 525.85 feet;

Thence South 52 degrees 45 minutes 34 seconds East, 334.83 feet calculated (South 52 degrees 50 minutes 34 seconds East, 334.94 feet record plat) to the Southwest corner of Lot 140 of said THE COTTONWOOD HIGHLANDS subdivision;

Thence departing said exterior boundary the following courses around the perimeter of said Lot 140;

Thence North 08 degrees 11 minutes 10 seconds West, 228.47 feet to a point of non-tangent curvature, from which point the radius point bears North 08 degrees 11 minutes 10 seconds West;



Thence along a curve to the left, having a radius of 320.00 feet and a central angle of 026 degrees 25 minutes 28 seconds, 147.58 feet to a point of tangency;

Thence North 55 degrees 23 minutes 21 seconds East, 286.39 feet;

Thence South 31 degrees 08 minutes 59 seconds East, 281.44 feet to the intersection with said exterior boundary;

Thence the following courses along said exterior boundary of THE COTTONWOOD HIGHLANDS subdivision;

Thence North 67 degrees 27 minutes 16 seconds East, 510.87 feet;

Thence North 44 degrees 10 minutes 00 seconds East, 1158.98 feet;

Thence North 45 degrees 50 minutes 00 seconds West, 450.00 feet;

Thence South 44 degrees 10 minutes 00 seconds West, 550.00 feet;

Thence North 45 degrees 50 minutes 00 seconds West, 500.00 feet to the intersection with the exterior boundary of that property described within the Special Warranty Deed to the City of Benson recorded in Document No. 0605-18326 in the office of the Cochise County Recorder;

Thence the following courses along said Special Warranty Deed;

Thence North 44 degrees 10 minutes 24 seconds East, 449.99 feet;

Thence North 45 degrees 49 minutes 54 seconds West, 410.07 feet;

Thence South 88 degrees 22 minutes 01 seconds West, 1982.49 feet to the said exterior boundary of THE COTTONWOOD HIGHLANDS subdivision;

Thence North 01 degrees 38 minutes 00 seconds West, 100.00 feet along said exterior boundary;

Thence South 88 degrees 21 minutes 16 seconds West, 297.61 feet along said exterior boundary to the intersection with the West line of Section 29;

Thence North 00 degrees 39 minutes 14 seconds West, 100.00 feet along said West line to the Northwest corner of said Section 29;

Thence North 88 degrees 22 minutes 00 seconds East, 2685.18 feet along the north line of the Northwest quarter of said Section 29 to the North quarter corner thereof;

Thence South 88 degrees 52 minutes 53 seconds East, 2632.56 feet along the north line of the Northeast quarter of said Section 29 to the Northeast corner thereof;

Thence South 00 degrees 21 minutes 07 seconds East, 5284.19 feet along the East line of said Section 29 to the corner common to Sections 28, 29, 32, 33;

Thence South 89 degrees 25 minutes 51 seconds East, 5314.82 feet along the North line of said Section 33 to the POINT OF BEGINNING;



EXCEPTING therefrom the following three Exceptions:

Exception 1

BEGINNING at the Northeast corner of said Section 20, Township 18 South, Range 20 East, Gila and Salt River Meridian, Cochise County, Arizona;

Thence North 89 degrees 49 minutes 41 seconds West, 2643.71 feet along the North line of said Section 20 to the North Quarter corner thereof;

Thence North 89 degrees 45 minutes 38 seconds West, 2644.50 feet along the North line of said Section 20 to the Northwest corner thereof;

Thence South 00 degrees 07 minutes 01 seconds West, 2650.59 feet along the west line of said Section 20 to the West Quarter corner thereof;

Thence South 00 degrees 04 minutes 09 seconds West, 1323.07 feet along the west line of said Section 20;

Thence South 89 degrees 48 minutes 47 seconds East, 5291.15 feet to a point on the East line of said Section 20;

Thence North 00 degrees 03 minutes 57 seconds East, 1323.64 feet to the East Quarter corner of said Section 20;

Thence North 00 degrees 03 minutes 17 seconds East, 2648.31 feet along the East line of said Section 20 to the POINT OF BEGINNING.

Containing 21,012,513 square feet (482.381 acres), more or less.

Exception 2

COMMENCING at the Southeast corner of said Section 5, Township 18 South, Range 20 East, Gila and Salt River Meridian, Cochise County, Arizona;

Thence North 00 degrees 08 minutes 29 Seconds East, 187.23 feet along the East line of said Section 5;

Thence North 89 degrees 51 minutes 31 seconds West, 50.00 feet to the POINT OF BEGINNING;

Thence North 00 degrees 08 minutes 29 seconds East, 25.00 feet;

Thence North 89 degrees 51 minutes 31 seconds West, 50.00 feet;

Thence South 00 degrees 08 minutes 29 seconds West, 50.00 feet;

Thence South 89 degrees 51 minutes 31 seconds East, 50.00 feet;

Thence North 00 degrees 08 minutes 29 seconds East, 25.00 feet to the POINT OF BEGINNING.

Containing 2500 square feet (0.0574 acres), more or less.

Exception 3



COMMENCING at the Northeast corner of said Section 32, Township 17 South, Range 20 East, Gila and Salt River Meridian, Cochise County, Arizona;

Thence South 00 degrees 40 minutes 39 Seconds West, 265.75 feet along the East line of said Section 32;

Thence North 89 degrees 19 minutes 21 seconds West, 50.00 feet to the POINT OF BEGINNING;

Thence North 00 degrees 40 minutes 39 seconds East, 25.00 feet;

Thence North 89 degrees 19 minutes 21 seconds West, 50.00 feet;

Thence South 00 degrees 40 minutes 39 seconds West, 50.00 feet;

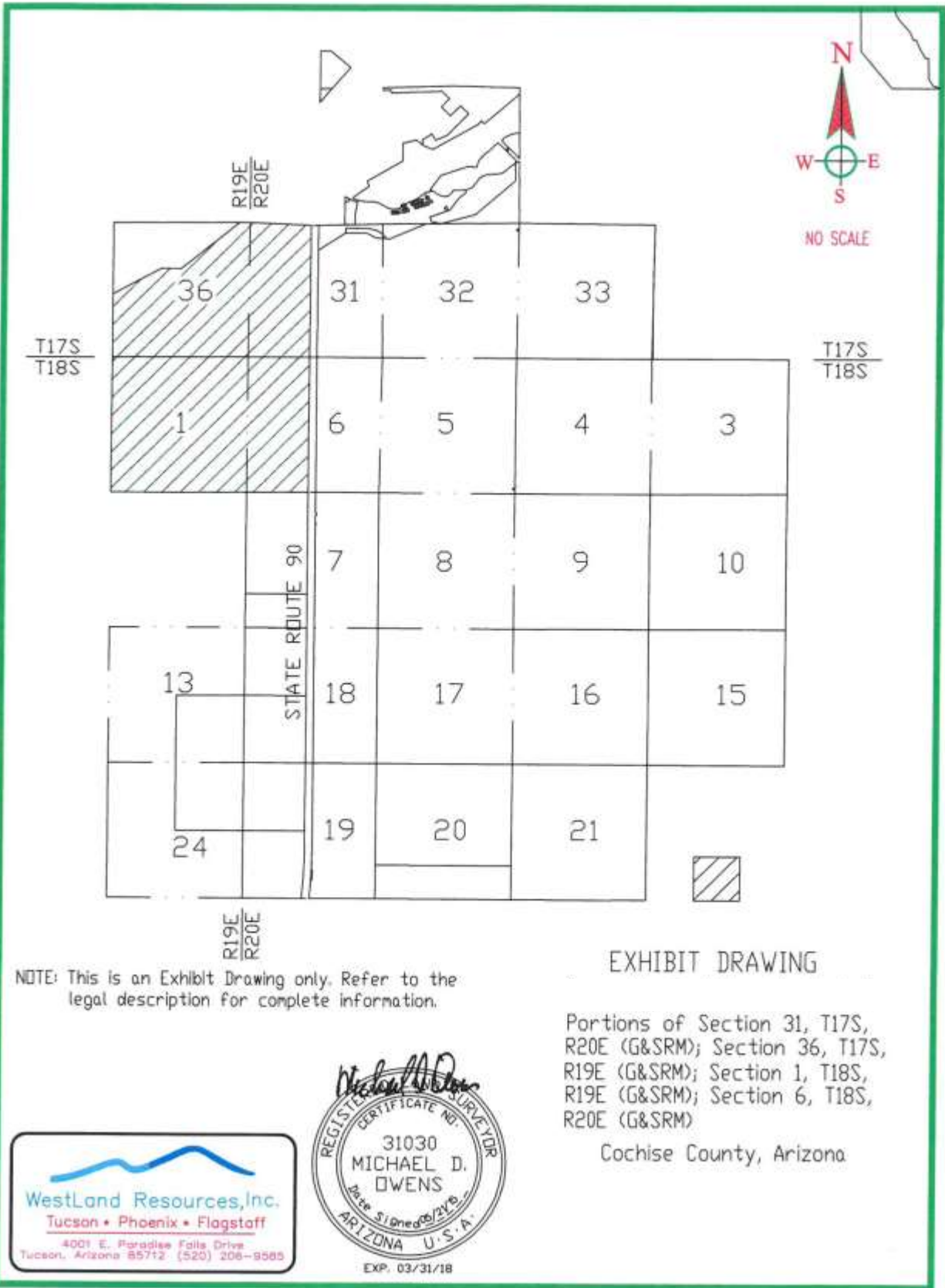
Thence South 89 degrees 19 minutes 21 seconds East, 50.00 feet;

Thence North 00 degrees 40 minutes 39 seconds East, 25.00 feet.

Containing 2500 square feet (0.0574 acres), more or less.

Net area including Block 2, Well Site, and Block 4 is 427,114,577 square feet (9,805.202 acres) more or less.





NOTE: This is an Exhibit Drawing only. Refer to the legal description for complete information.

EXHIBIT DRAWING

Portions of Section 31, T17S, R20E (G&SRM); Section 36, T17S, R19E (G&SRM); Section 1, T18S, R19E (G&SRM); Section 6, T18S, R20E (G&SRM)

Cochise County, Arizona



Those portions of Section 31, Township 17 South, Range 20 East, Gila and Salt River Meridian; Section 6, Township 18 South, Range 20 East, Gila and salt River Meridian; Section 36, Township 17 South, Range 19 East, Gila and Salt River Meridian and Section 1, Township 18 South, Range 19 East, Gila and Salt River Meridian, all in Cochise County, Arizona described as follows:

BEGINNING at the Southwest corner of said Section 1;

Thence North 00 degrees 11 minutes 46 seconds East, 2647.37 feet along the West line of said Section 1 to the West Quarter corner thereof;

Thence North 00 degrees 16 minutes 18 seconds East, 2619.28 feet along the West line of said Section 1 to the Northwest corner thereof, also being the Southwest corner of said Section 36;

Thence North 00 degrees 04 minutes 41 seconds East, 2462.96 feet along the West line of said

Section 36; Thence departing said West line North 61 degrees 44 minutes 23 seconds East, 2131.29 feet;

Thence South 89 degrees 52 minutes 03 seconds East, 771.87 feet;

Thence North 51 degrees 12 minutes 56 seconds East, 2891.21 feet to the North line of said Section 36;

Thence North 89 degrees 43 minutes 03 seconds East 400.04 feet along the North line of said Section 36 to the Northeast corner thereof, also being the Northwest corner of said Section 31;

Thence South 87 degrees 25 minutes 37 seconds East, 2373.90 feet along the North line of said Section 31 to a point on the West right-of-way of State Route 90;

Continue along the said West right-of-way of State Route 90 the following courses; Thence South 00 degrees 05 minutes 35 seconds West, 4.24 feet;

Thence South 00 degrees 11 minutes 49 seconds West, 5144.21 feet to the intersection with the line common to said Sections 31 and 6;

Thence South 00 degrees 02 minutes 49 seconds West, 5278.00 feet to the intersection with the South line of said Section 6;

Thence departing said right-of-way South 89 degrees 49 minutes 12 seconds West, 2397.60 feet along the South line of said Section 6 to the Southwest corner thereof, also being the Southeast corner of said Section 1;

Thence South 89 degrees 41 minutes 11 seconds West, 2639.59 feet along the South line of said Section 1 to the South Quarter corner thereof;

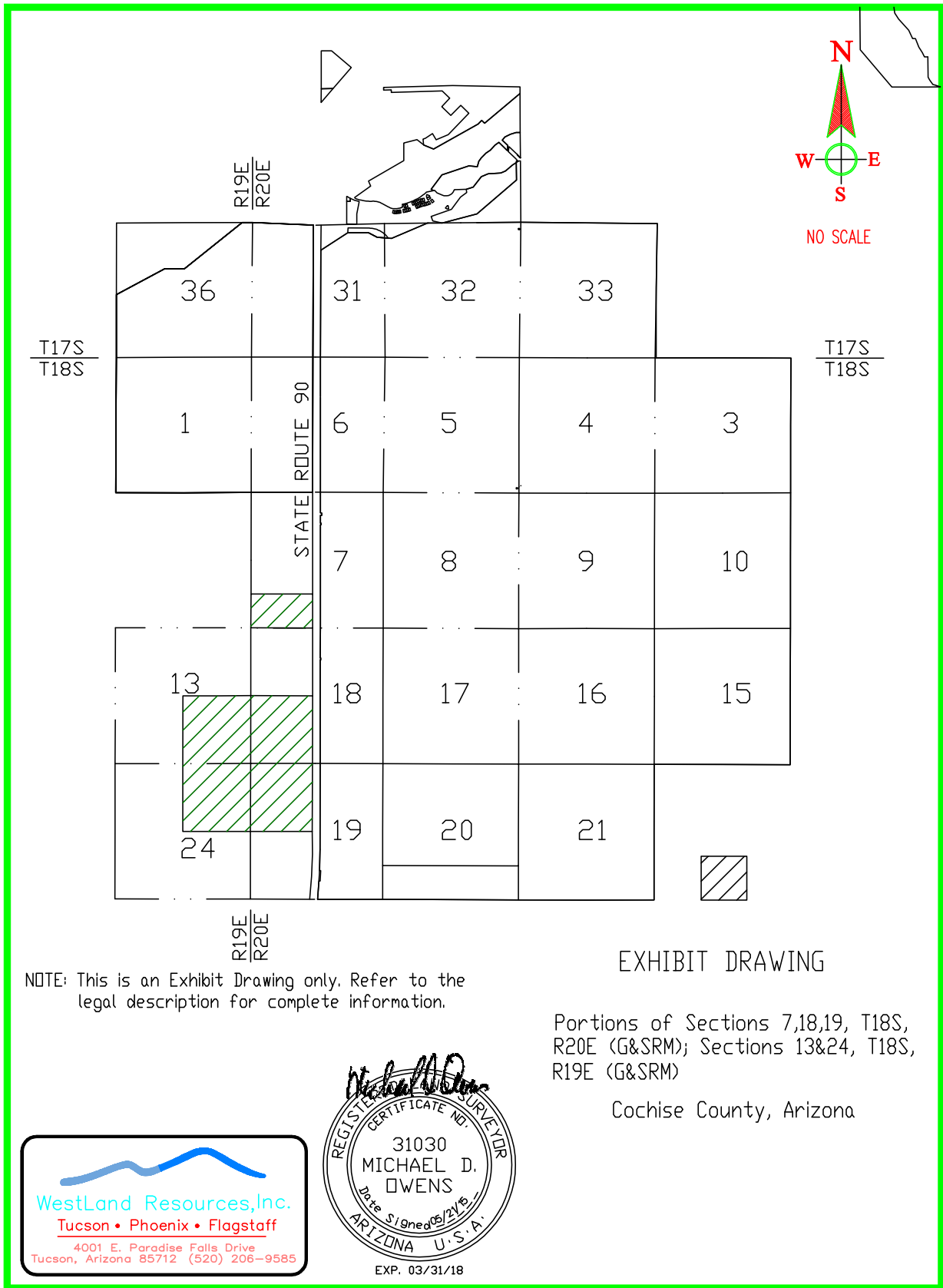
Thence North 89 degrees 53 minutes 24 seconds West, 2640.06 feet along the south line of said



Section 1 to the Southwest corner thereof and POINT OF BEGINNING.

Containing 72,947,717 square feet (1,674.649 acres), more or less.





NOTE: This is an Exhibit Drawing only. Refer to the legal description for complete information.

EXHIBIT DRAWING

Portions of Sections 7,18,19, T18S, R20E (G&SRM); Sections 13&24, T18S, R19E (G&SRM)

Cochise County, Arizona



The Villages at Vigneto
September 8, 2015

Those portions of Sections 7, 18, and 19, Township 18 South, Range 20 East, Gila and Salt River Meridian and Sections 13 and 24, Township 18 South, Range 19 East, Gila and Salt River Meridian, all in Cochise County, Arizona described as follows:

BEGINNING at the Southwest corner of said Section 7;

Thence South 89 degrees 53 minutes 59 seconds East, 2406.93 feet along the South line of said Section 7 to a point on the West right-of-way of State Route 90;

Thence North 00 degrees 02 minutes 13 seconds East, 1322.88 feet along the said West right-of-way to the intersection with the Southwest sixteenth line of said Section 7;

Thence departing said right-of-way North 89 degrees 54 minutes 48 seconds West, 2403.15 feet along the said Southwest sixteenth line to a point on the West line of said Section 7;

Thence South 00 degrees 12 minutes 02 seconds West, 1322.31 feet along the West line of said Section 7 to the Southwest corner thereof and POINT OF BEGINNING.

Containing 3,180,888 square feet (73.023 acres), more or less.

BEGINNING at the Quarter corner common to said Sections 19 and 24;

Thence South 89 degrees 54 minutes 56 seconds East, 2409.56 feet along the Mid-section line of said Section 19 to a point on the West right-of-way of State Route 90;

Continue along the said West right-of-way of State Route 90 the following courses;

Thence North 00 degrees 12 minutes 06 seconds East, 2654.03 feet to the intersection with the line common to said Sections 18 and 19;

Thence North 00 degrees 02 minutes 48 seconds East, 2641.27 feet to the intersection with the Mid-section line of said Section 18;

Thence departing said right-of-way North 89 degrees 55 minutes 24 seconds West, 2410.45 feet along said Mid-section line to the Quarter corner common to said Sections 18 and 13;

Thence South 89 degrees 55 minutes 06 seconds West, 2639.00 feet along the Mid-section line of said Section 13 to the Center Quarter corner thereof;

Thence South 00 degrees 12 minutes 23 seconds West, 2645.80 feet along the Mid-section line of said Section 13 to the Quarter corner common to said Sections 13 and 24;

Thence South 00 degrees 00 minutes 47 seconds West, 2648.03 feet along the Mid-section line of said Section 24 to the Center Quarter corner thereof;

Thence North 89 degrees 56 minutes 35 seconds East, 2638.53 feet along the Mid-section line of said Section 24 to the Quarter corner common to said Sections 19 and 24 and POINT OF BEGINNING.

Containing 26,753,207 square feet (614.169 acres), more or less.



Appendix C: The Villages at Vigneto Plant List

TREES

<u>Botanical Name</u>	<u>Common Name</u>
Acacia ¹ aneura	Mulga
Acacia ¹ salicina	Shoestring ¹ Acacia
Albizia ¹ ulibrissin	Mimosa ¹ (Silk ¹ Tree)
Arbutus ¹ unedo	Strawberry ¹ Tree
Bauhinia ¹ unarioides	White ¹ Orchid ¹ Tree
Brahea ¹ armata	Mexican ¹ Blue ¹ Palm
Caesalpinia ¹ gilliesii	Yellow ¹ Bird ¹ of ¹ Paradise
Callistemon ¹ citrinus	Bottlebrush
Cedrus ¹ deodora	Deodar ¹ Cedar
Celtis ¹ occidentalis	Common ¹ Hackberry
Celtis ¹ pallida	Desert ¹ Hackberry
Celtis ¹ reticulata	Netleaf ¹ Hackberry
Cercis ¹ canadensis ¹ v. mexicana	Mexican ¹ Redbud
Cercis ¹ occidentalis	Western ¹ Redbud
Cercocarpus ¹ spp.	Mountain ¹ Mahogany
Chilopsis ¹ linearis	Desert ¹ Willow
Chitalpa ¹ ashkentensis	Chitalpa
Cordia ¹ boissieri	Texas ¹ Olive
Cupressus ¹ arizonica	Arizona ¹ Cypress
Cupressus ¹ forbesii	Tecate ¹ Cypress
Cupressus ¹ sempervirens	Italian ¹ Cypress
Elaeagnus ¹ angustifolia	Russian ¹ Olive
Eucalyptus ¹ papauana	Ghost ¹ Gum
Eucalyptus ¹ spp.	Eucalyptus
Eysenhardtia ¹ orthocarpa	Kidneywood
Forestiera ¹ neomexicana	Desert ¹ Olive
Fraxinus ¹ reggii	Little-leaf ¹ Ash
Fraxinus ¹ hybrid	Fan ¹ West ¹ Ash
Fraxinus ¹ velutina ¹ 'Rio Grande'	Arizona ¹ Ash
Juglans ¹ major	Arizona ¹ Walnut
Juniperus ¹ monosperma	One ¹ Seed ¹ Juniper
Juniperus ¹ spp.	Juniper
Koeleruteria ¹ paniculata	Goldenrain ¹ Tree
Lagerstroemia ¹ spp.	Crape ¹ Myrtle
Leucaena ¹ retusa	Golden ¹ Ball ¹ Lead ¹ Tree
Olea ¹ europaea ¹ 'Swan Hill'	Fruitless ¹ Olive

TREES

<u>Botanical Name</u>	<u>Common Name</u>
Pinus ¹ embroides, ¹ edulis, ¹ monophylla	Pinyon ¹ Pine
Pinus ¹ edlarica	Mondel ¹ Pine
Pinus ¹ halepensis	Aleppo ¹ Pine
Pinus ¹ pinea	Italian ¹ Stone ¹ Pine
Pistacia ¹ chinensis	Chinese ¹ Pistache
Pistacia ¹ 'Red Push'	Red ¹ Push ¹ Pistache
Platanus ¹ wrightii	Arizona ¹ Sycamore
Populus ¹ altooides	Cottonless ¹ Cottonwood
Prosopis ¹ albari ¹ chilensis	Argentine/Chilean ¹ Mesquite
Prosopis ¹ glandulosa	Honey ¹ Mesquite
Prosopis ¹ hybrid	Thornless ¹ Mesquite
Prosopis ¹ pubescens	Screwbean ¹ Mesquite
Prosopis ¹ velutina	Velvet ¹ Mesquite
Prunus ¹ cerasifera ¹	Bradford ¹ Pear
Pyrus ¹ calleryana	Purple ¹ Leaf ¹ Plum
Quercus ¹ buckleyi	Buckeye ¹ Dak
Quercus ¹ chrysolepis	Canyon ¹ Live ¹ Dak
Quercus ¹ emoryi	Emory ¹ Dak
Quercus ¹ gambelii	Gambel ¹ Dak
Quercus ¹ hypoleucoides	Silverleaf ¹ Dak
Quercus ¹ alex	Holly ¹ Dak
Quercus ¹ muehlenbergii	Chinquapin ¹ Dak
Quercus ¹ oblongifolia	Mexican ¹ Blue ¹ Dak
Quercus ¹ uber	Cork ¹ Dak
Quercus ¹ virginiana ¹	Southern ¹ Live ¹ Dak
Rhamnus ¹ lilicifolia	Holly ¹ Redberry
Rhus ¹ spp.	Sumac
Robinia ¹ neomexicana	New ¹ Mexican ¹ Locust
Sambucus ¹ neomexicana	Blue ¹ Elderberry
Sophora ¹ secundiflora	Texas ¹ Mountain ¹ Laurel
Tipuana ¹ tipu	Tipu ¹ Tree
Ulmus ¹ parvifolia ¹ 'Sempervirens'	Evergreen ¹ Elm
Ungnadia ¹ speciosa	Mexican ¹ Buckeye
Vitex ¹ agnus-castus	Chaste ¹ Tree
Xylosma ¹ longestum	Xylosma



ACCENTS

<u>Botanical Name</u>	<u>Common Name</u>
Agave americana	Century Plant
Agave lechuguilla	Lechuguilla
Agave palmeri	Palmer's Agave
Agave parryi	Parry's Agave
Agave parryi var. huachuensis	Huachuca Agave
Agave parviflora	Agave Parviflora
Agave scabra	Rough-leaved Agave
Agave utahensis	Agave Utah
Agave victoriae-reginae	Agave Victoria
Dasyliirion acrotriche	Green Desert Spoon
Dasyliirion quadrangulatum	Mexican Grass Tree
Dasyliirion texanum	Texas Sotol
Dasyliirion wheeleri	Desert Spoon
Echinocactus grusonii	Golden Barrel Cactus
Echinocereus spectinatus varieties	Arizona or Texas Rainbow Hedgehog
Echinocereus triglochidiatus	Claret Cup
Ferocactus wislizenii	Fishhook Barrel Cactus
Fouquieria splendens	Ocotillo
Hesperaloe parviflora	Red Yucca
Mammillaria spp.	Pincushions
Opuntia basilaris	Beavertail Cactus
Opuntia bigelovii	Teddybear Cholla
Opuntia chinocarpa	Silver Cholla
Opuntia ellisiana	Tiger Tongue
Opuntia engelmannii	Engleman's Prickly Pear
Opuntia imbricata	Tree Cholla
Opuntia leptocaulis	Desert Christmas Cactus
Opuntia macrocentra	Purple Prickly Pear
Opuntia santa-rita	Santa Rita Prickly Pear
Opuntia spinosior	Cane Cholla
Yucca baccata	Banana Yucca
Yucca elata	Soaptree Yucca
Yucca glauca	Plain Soapweed
Yucca rigida	Blue Yucca
Yucca rostrata	Beaked Yucca
Yucca schottii	Mountain Yucca

GRASSES

<u>Botanical Name</u>	<u>Common Name</u>
Achnatherum hymenoides	Indian Rice Grass
Aristida purpurea	Purple Three-Awn
Bothriochloa barbinodis	Cane Beardgrass
Bouteloua	Side-oats Grama
Bouteloua gracilis	Blue Grama Grass
Digitaria californica	Arizona Cottontop
Elytrigia longata 'Jose Select'	Jose Select Tall Wheatgrass
Muhlenbergia apellensis	Muhly Grass
Muhlenbergia capillaris	Regal Mist
Muhlenbergia emersleyi	Bull Grass
Muhlenbergia spp.	Muhly/Deer Grass
Nassella tenuissima	Mexican Feather Grass
Nolina natapensis	Tree Bear Grass
Nolina microcarpa	Bear Grass
Panicum virgatum 'Prairie Sky'	Prairie Sky
Pennisetum setaceum 'Rubrum'	Purple Fountain Grass
Sporobolus airoides	Alkali Sacaton
Sporobolus wrightii	Big Sacaton



SHRUBS

Botanical Name	Common Name
Acacia angustissima Hirta'	Fern Acacia
Acacia constricta	White Thorn Acacia
Aloisia gratissima	Whitebrush
Aloisia wrightii	Wright's Beebush
Anisacanthus quadrifidus wrightii	Desert Honeysuckle
Anisacanthus thurberi	Desert Honeysuckle
Arctostaphylos pungens	Manzanita
Artemisia spp.	Artemisia
Asclepias tinaria	Pineleaf Milkweed
Atriplex canescens	Four-wing Saltbush
Atriplex lentiformis	Quail Bush
Baccharis starn'	Baccharis Starn'
Baccharis sarothroides	Desert Broom
Berberis haematocarpa	Red Barberry
Berberis trifoliata	Agarita
Buddleja davidii Black Knight'	Black Knight Butterfly Bush
Buddleja narrabiifolia	Woolly Butterfly Bush
Caesalpinia pulcherrima	Red Bird of Paradise
Calliandra eriophylla	Fairy Duster
Cassia wislizenii	Shrubby Senna
Ceratoides lanata	Winter Fat
Cercocarpus edifolius	Mountain Mahogany
Chamaebatiaria millefolium	Fernbush
Chrysactinia mexicana	Damianita
Chrysothamnus nauseosus	Rabbitbrush
Condalia lycioides, mexicana, spathulata	Crucillo
Convolvulus neorum	Bush Morning Glory
Cordia parvifolia	Little-leaf Cordia
Cotoneaster spp.	Cotoneaster
Dalea bicolor	Indigo Bush/Silver Dalea
Dalea capitata	Golden Dalea
Dalea frutescens	Black Dalea
Dalea pulchra	Smoke Bush/Indigo Bush
Dodonaea viscosa	Green Hopbush
Ephedra spp.	Mormon Tea
Ericameria laricifolia	Turpentine Bush
Eriogonum spp.	Buckwheat
Erythrina labelliformis	Coral Bean
Fallugia paradoxa	Apache Plume
Fendlera rupicola	False Mockorange
Frangula californica	Coffeeberry/Buckthorn
Garrya wrightii	Silk Tassel

SHRUBS

Botanical Name	Common Name
Gossypium thurberi	Wild Cotton
Gutierrezia sarothrae	Snakeweed
Hyptisemoryi	Desert Lavender
Juniperis spp.	Juniper
Justicia californica	Chuparosa
Justicia spicigera	Mexican Honeysuckle
Lagerstroemia spp.	Crape Myrtle
Larrea tridentata	Creosote Bush
Lavandula spp.	Lavender
Leonotis leonurus	Lion's Tail
Leucophyllum spp.	Texas Ranger/Sage
Lycium spp.	Lycium
Myrtus communis	Myrtle
Nandina domestica	Heavenly Bamboo
Nerium oleander	Oleander
Photinia Fraseri	Fraser's Photinia
Pinus mugo mugo	Mugo Pine
Potentilla fruticosa	Shrubby Cinquefoil
Psoralea scoparia	Broom Dalea
Purshia mexicana	Cliffrose
Pyracantha spp.	Firethorn
Quercus turbinella	Desert Scrub Oak
Rhus virens	Evergreen Sumac
Rosa banksiae	Tombstone Rose
Rosmarinus officinalis	Rosemary
Salzaria mexicana	Paperbag Bush
Salvia levelandii	Cleveland Sage
Salvia dorrii	Desert Sage
Salvia Greggii	Autumn Sage
Salvia hybrid	Raspberry Delight
Salvia microphylla	Scarlet Sage
Salvia mohavensis	Mojave Sage
Salvia muelleri	Royal Purple Sage
Salvia pachyphylla	Giant Flowered Purple Sage
Santolina spp.	Santolina
Senecio cineraria	Dusty Miller
Senecio longilobus	Threadleaf Grousel
Senecio viravira	Dusty Miller
Simmondsia chinensis	Jobba (Goat Nut)
Tecoma stans	Yellow Bells
Teucrium fruticans	Bush Germander
Vauquelinia californica	Arizona Rosewood



ANNUALS/BIBIENNIALS/PERENNIALS

Botanical Name	Common Name
Achillea 'Moonshine'	Moonshine Yarrow
Achillea filipendulina	Fernleaf Yarrow
Achillea millefolium	Common Yarrow
Achillea serbica	Serbian Yarrow
Achillea 'Kellereri'	Keller's Yarrow
Agastache spp.	Agastache
Alyssum vulfenianum	Alyssum
Amorpha canescens	Leadplant
Anacyclus depressus	Mount Atlas Daisy
Artemisia filifolia	Sand Sagebrush
Artemisia frigida	Fringed Wormwood
Artemisia spp.	Artemisia spp.
Artemisia stellerana	Old Woman/Dusty Miller
Asclepias spp.	Milkweeds
Asclepias tuberosa	Butterfly Weed
Aurinia saxatilis/Alyssum	Basket of Gold
Baileya multiradiata	Desert Marigold
Berlandiera lyrata	Chocolate Flower
Callirhoe calceoides	Logan Calhoun
Callirhoe involucrata	Poppy Mallow
Calylophus spp.	Sundrops
Centaurea, Artemisia, Senecio spp.	Dusty Miller
Centranthus tuber	Jupiter's Beard
Chamaemelum nobile	Chamomile
Conoclinium (Eupatorium) reggii	'Boothill'
Coreopsis spp.	Coreopsis
Cosmos spp.	Cosmos
Dalea purpurea	Purple Prairie Clover
Delosperma spp.	Ice Plant
Echinops spp.	Globe Thistle
Erigeron spp.	Fleabane
Eriogonum alberti	Albert's Buckwheat
Eriogonum umbellatum	Sulfur Flower
Eriogonum wrightii	Wright's Buckwheat
Erodium chrysanthum	Yellow Stork's Bill
Eschscholzia californica sp. mexicana	Californica Poppy
Euphorbia spp.	Euphorbia
Gaillardia spp.	Gaillardia
Gaura lindheimeri	Gaura
Gilia spp.	Gilia

ANNUALS/BIBIENNIALS/PERENNIALS

Botanical Name	Common Name
Helianthus maximiliana	Sante Fe Helianthus
Heliomeris (Viguiera) spp.	Goldeneye
Kniphofia uvaria	Red Hot Poker
Limonium latifolium	Blue Statice
Linum lewisii	Western Blue Flax
Melampodium leucanthum	Blackfoot Daisy
Nepeta spp.	Catmint/Catnip
Oenothera spp.	Evening Primrose
Origanum spp.	Oregano
Perovskia	Russian Sage
Phemeranthus calycinum	Flame Flower
Phlomis russeliana	Hardy Jerusalem Sage
Phlox tenuifolia	Desert Phlox
Psilostrophe spp.	Paper Flower
Ruschia calvinia pink	Shrubby Ice Plant
Salvia chamaedryoides	Blue Sage
Salvia clarea	Clary Sage
Scutellaria spp.	Prairie Skullcap
Scutellaria hybrid	'Violet Cloud'
Sedum spp.	Sedum/Stonecrop
Sempervivum tectorum	Hens and Chickens
Silene laciniata	Mexican Catchfly
Solidago spp.	Goldenrod
Sphaeralcea spp.	Globemallow
Stachys byzantina	Lamb's Ears
Stachys spp.	Stachys
Stanleya pinnata	Prince's Plume
Tagetes lemmonii	Mountain Marigold
Tetranneuris acaulis	Angelita Daisy
Tetranneuris scaposa	Clustered Goldflower
Thymophylla spp.	Dyssodia
Thymus lanuginosus	Woolly Thyme
Thymus spp.	Thyme
Verbascum olympicum	Mullein
Veronica incana	Silver Speedwell
Veronica orientalis	Oriental Speedwell
Viguiera stenoloba	Skeletonleaf Goldeneye
Zauchneria californica latifolia	Hardy Hummingbird Trumpet
Zexmenia hispida	Zexmenia
Zinnia grandiflora	Prairie Zinnia



VINES

<u>Botanical Name</u>	<u>Common Name</u>
Cissus trifoliata	Arizona Grape Ivy
Euonymus fortunei	Winter Creeper
Funastrum cynanchoides	Climbing Milkweed
Ipomoea coccinea	Scarlet Creeper
Lonicera japonica 'Halliana'	Hall's Honeysuckle
Macfadyena unguis-cati	Cat's Claw
Parthenocissus spp.	Creeper Vines
Vitis spp.	Grape Species
Wisteria spp.	Wisteria

GROUND COVER

<u>Botanical Name</u>	<u>Common Name</u>
Alyssum montanum	Mountain Gold Alyssum
Bahia absinthifolia	Bahia
Dalea greggii	Trailing Indigo Bush
Dianthus gratianopolitanus	Firewitch
Evolvulus arizonicus	Arizona Blue Eyes
Helianthemum nummularium	Sun Rose
Lantana spp.	Lantana
Myoporum parvifolium	Myoporum
Penstemon spp.	Penstemon
Salvia chinophylla	Creeping Sage
Teucrium lucidrys	Germander
Verbena bipinnatifida	Verbena
Verbena peruviana	Verbena



Master Transportation Plan
for
Vigneto

Prepared for:

El Dorado Holdings, Inc.

426 North 44th Street

Suite 100

Phoenix, AZ 85008

Prepared by:





Master Transportation Plan
for

Vigneto

Cochise County, Arizona

Project Number TR15002

Prepared for:

El Dorado Holdings, Inc.

August 31, 2015

Revised December 4, 2015

Prepared by:

United Civil Group Corporation



Conducted by: _____

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1.0 INTRODUCTION

This Transportation Master Plan is guided by the vision for The Villages at Vigneto as presented in the Final Community Master Plan (CMP), which is a creative description of Vigneto's future. The Transportation Master Plan and the CMP have been developed concurrently in acknowledgement that land use and transportation are inextricably linked. This Transportation Master Plan:

- assists the property owners in making critical land use site planning decisions regarding traffic and transportation aspects,
- provides preliminary level traffic analyses in support of The Villages at Vigneto CMP, and
- gives direction for the City of Benson's transportation system.

In order to meet the goals of the Villages at Vigneto CMP, specific objectives were developed for this Transportation Master Plan. The first objective is to develop a macroscopic traffic model to estimate daily trips generated by the development at full build-out. Second, determine planning level roadway laneage and cross sections for each roadway classification. Third, forecast peak turning movement volumes at the access points along SR 90 and major intersections within the development to provide planning level intersection layouts. Next, demonstrate that proposed roadway network and access points can operate at acceptable levels of service (LOS) for the build-out conditions. And last, to provide recommendations and guidance on anticipated traffic control requirements at major intersections both internal to the development and at the access points along SR 90. Limited operational analyses were prepared to determine preliminary layouts for the major intersections under build-out conditions.

This Master Transportation Plan will follow the June 2015 ADOT Traffic Engineering Guidelines and Processes (TGP), Section 240, Traffic Impact Analysis – Traffic Studies Category IIc as closely as possible. However, as The Villages at Vigneto develops, Traffic Impact Analysis Reports (TIA) will be required for each development phase (known as Planning Units in the CMP) to specifically define transportation planning and construction. The TIAs will provide reliable guidance on short- and long-range planning of site accesses and the interface between the on-site circulation and the off-site traffic. Recommendations from the TIAs will include exclusive turn lane storage length needs, traffic control warrant analyses and needs, speed considerations, capacity analyses and roadway geometrics specific to each phase of development that cannot be provided at the Master Transportation Plan planning level. All improvements on SR 90 will require a permit with ADOT. Per ADOT, permits will not allowed without a City of Benson IGA/MOU on the level of development possible per intersection improvement.

The Villages at Vigneto is a master planned community located within the City of Benson, Arizona. The development is located approximately 4 miles south of Interstate 10 (I 10) on State Route 90 (SR 90).

The Villages at Vigneto will include a mix of 28,000 age-targeted-lifestyle and traditional family dwelling units on approximately 12,254.6 acres of currently vacant land. The Vigneto community will also be comprised of a range of amenities including: golf courses, parks, small community lakes, open space, entertainment and business activities (commercial, retail, resort/hotel, schools, agribusiness, and mixed use development). The Villages at Vigneto is anticipated to develop over a twenty year time frame; however, this is dependent upon economic cycles. Therefore, for the purposes of this Transportation Master Plan, traffic analysis and associated traffic volumes is assumed to be fully built and occupied by year 2035. Three major phases of the development are currently planned for Vigneto.

An extensive path system is planned for the Villages at Vigneto. This system consists of 16 foot paved multi-modal paths adjacent to arterial roadways and 7 foot multi-use lanes on collector roadways that link the recreational areas, commercial areas and open space to the residential areas. The extensive path system has been carefully planned within the community and will take advantage of the existing Kinder Morgan Gas Line, creating a community easement, that runs through the property from southeast to northwest and creates a community multi-use corridor with a multi-modal pathway. The network of multi-use lanes and paths will be developed from the onset and incorporated into the traditional transportation network. This multi-use system will support short duration trips through the use of low speed vehicles (LSV)s, electric auxiliary vehicles, cyclists and pedestrians. By its design and nature, the multi-use path is expected to reduce internal vehicle trips within the community. LSVs will not be allowed on the state highway system.

2.0 METHODOLOGIES AND STANDARDS

This chapter defines the methodologies and standards utilized in the analysis of intersections and roadway segments for the Vigneto development.

2.1 Intersection Level of Service (LOS)

Levels of service provide a common and consistent means of evaluating the need for roadway improvements. The LOS concept is widely used and offers a uniform analysis methodology.

Beginning in 1965, the level of service (LOS) concept has been used in traffic engineering to describe the quality of traffic flow and the degree of congestion a driver can expect. The concept defines the near-capacity condition as Level of Service "E", while a free flow condition under which a driver would experience very little or no delay is defined as Level of Service "A". Capacity analysis is a procedure used to compare the forecasted traffic volumes with the theoretical carrying capacity of an intersection. The results of the capacity analysis are an estimator of the quality of flow for that intersection.

The roadway system's ability to accommodate traffic demand is typically limited by the capacity of the intersections. Therefore, intersection capacity analysis is a principal tool used in traffic engineering to determine the adequacy of a roadway system.

The level of service (LOS) concept is used in traffic engineering to describe the degree of delay a driver can expect. The concept defines a near-capacity condition as LOS E while a free flow condition under which a driver would experience minimal delay is defined as LOS A. Most jurisdictions strive to obtain a level of service D or better. Intersections having a LOS E or LOS F may warrant improvements.

Per the ADOT Traffic Engineering Guidelines and Processes section 240-13a, where the roadways, intersections, intersection approaches or lane groups will operate at arterial level of service C or better without the development, the traffic impact of the development on the State highway in the horizon year shall be mitigated to level of service C. Mitigation to level of service D may be acceptable in urban areas over 50,000 population at the discretion of the Regional Traffic Engineer with the concurrence of all affected municipalities.

The intersections level of service was determined using the methodologies presented the *Highway Capacity Manual* published by the Transportation Research Board. The delay thresholds for levels of service are shown in the following table.

Table 1: Level of Service for Intersections

Level of Service	Signalized Delay (Sec/Veh)	Unsignalized Delay (Sec/Veh)
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

Source: Highway Capacity Manual 2010

The level of service criteria for two-way stop controlled intersections is somewhat different from the criteria used for signalized intersections primarily because different transportation facilities create different driver perceptions. The expectation is that a signalized intersection is designed to carry higher traffic volumes and experience greater delay than an un-signalized intersection.

2.2 Multilane Highway Segment Level of Service (LOS) State Route 90

Level of service for uninterrupted flow of existing segments on multi-lane highways is defined by density because there are several influencing factors, such as free flow speed (FFS), side friction, isolated intersections, and opposing flows on undivided cross sections. Therefore, LOS for existing multilane highway segments is defined in Table 2. Level of Service for Multilane Highway Segments - EXISTING.

Table 2. Level of Service for Multilane Highway Segments - EXISTING

LOS	FFS (mi/h)	Density (pc/mi/ln)
A	All	$>0-11$
B	All	$>11-18$
C	All	$>18-26$
D	All	$>26-35$
E	60	$>35-40$
	55	$>35-41$
	50	$>35-43$
	45	$>35-45$
F	Demand Exceeds Capacity	
	60	>40
	55	>41
	50	>43
	45	>45

Source: Highway Capacity Manual 2010

In design analysis, a known demand volume is used to determine the number of lanes needed to deliver a target LOS. Therefore, the maximum service flow rate for the target LOS can be

selected from Table 3. Maximum Service Flow Rates for Multilane Highway Segments. The objective of this preliminary engineering is to get a general idea of the number of lanes that will be required to deliver a target LOS.

Table 3. Maximum Service Flow Rate For Multilane Highway

FFS (mi/hr)	Target LOS (pc/h/ln)				
	A	B	C	D	E
60	660	1080	1550	1980	2200
55	600	990	1430	1850	2100
50	550	900	1300	1710	2000
45	290	810	1170	1550	1900

2.3 Roadway Level of Service (LOS)

Most jurisdictions strive to obtain a level of service of C or better on for roadway level of service. Roadways having a level of service in the E or F range are considered congested and warrant further review for possible upgrading. Where feasible, capacity improvements or other remedial actions are usually recommended if the level of service is worse than D.

Levels of service on roadway segments are defined as follows:

- **LOS A** – Free-flowing conditions. The operation of vehicles is virtually unaffected by the presence of other vehicles, and operations are constrained only the geometric features of the highway and driver preferences.
- **LOS B** – Indicative of free flow, but the presence of other vehicles begins to have a noticeable impact on speeds and freedom to maneuver.
- **LOS C** – Represents a range on which the influence of traffic density on operations becomes marked. The ability to maneuver within the traffic stream, and to select an operating speed is now clearly affected by the presence of other vehicles.
- **LOS D** – Borders on unstable flow. Speeds and ability to maneuver are severely restricted because of congestion.
- **LOS E** – Operations are near or at capacity and flow is quite unstable.
- **LOS F** – Represents forced or breakdown flow.

The analysis of roadway segment’s level of service is based on the number of lanes, the functional classification of the roadway, the maximum desired level of service capacity, roadway geometrics and the existing or forecasted average daily traffic volume.

Table 4. Network Link Characteristics provides the proposed segment level of service (LOS C and D) maximum volumes, for various facility classifications used in this study. The evaluation criteria is provided in the Benson Small Area Transportation Study 2007 and the Northwest Cochise County Transportation Study 2005.

Table 4. Network Link Characteristics

Functional Classification	LOS C	LOS D
Arterial Roadway - 4 lanes with TWLTL	22,600	30,400
Arterial - 4 lanes	21,400	30,100
Arterial Roadway – 2 lanes with TWLTL	11,025	14,500
Arterial Roadway -2 lanes	7,000	13,600
Collector Roadway - 2 lanes	2,000	2,400

Source: Benson Small Area Transportation Study 2007

Volumes shown in the table should not be used to determine roadway classifications. Roadway classifications should be determined by definition and supported by traffic analysis indicating the desired level of service.

For planning purposes, the levels of service are determined by:

- LOS C or lower – Under Capacity
- LOS C to D – At Capacity
- LOS D or Higher – Over Capacity

3.0 PROPOSED DEVELOPMENT

3.1 Site Location

The Villages at Vigneto is a master planned community located within the City of Benson, Arizona. The development is located approximately 4 miles south of Interstate 10 (I 10) on State Route 90 (SR 90) as shown in *Figure 1. Vicinity Map*. The City of Benson, Arizona, approximately 45 miles east-southeast of Tucson on I-10.

3.2 Land Use and Intensity

The land within and surrounding the proposed development is currently vacant and undeveloped. There are no additional known or planned developments within the study area. Analysis contained in this report includes general impacts related to the proposed Vigneto development. Specific impacts will not be known until more detailed development plans and specific TIAs are prepared as Vigneto matures.

3.3 Site Plan

The Villages at Vigneto will include a mix of 28,000 age-targeted-lifestyle and traditional family dwelling units on approximately 12,254.6 acres of currently vacant land. The Vigneto community will also be comprised of a range of amenities including: golf courses, parks, small community lakes, open space, entertainment and business activities (commercial, retail, resort/hotel, schools, agribusiness, and mixed use development). *Figure 2. Site Plan and Land Use* illustrates the proposed Villages at Vigneto development.

3.4 Development Phasing and Timing

The Villages at Vigneto is anticipated to develop over a twenty year time frame; however, this is dependent upon economic cycles. Therefore, for the purposes of this Transportation Master Plan, traffic analysis and associated traffic volumes is assumed to be fully built and occupied by year 2035.

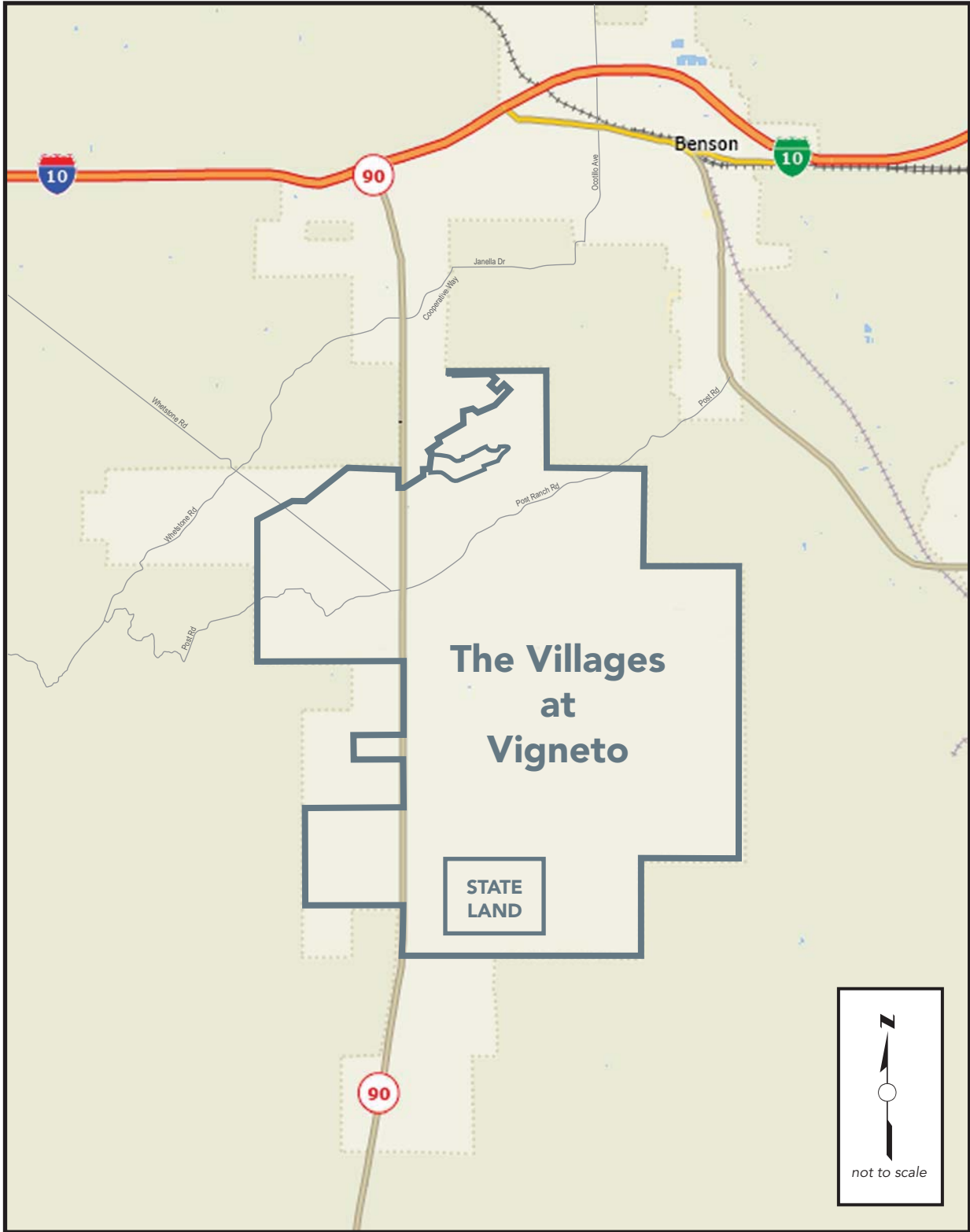


Figure 1. Vicinity Map

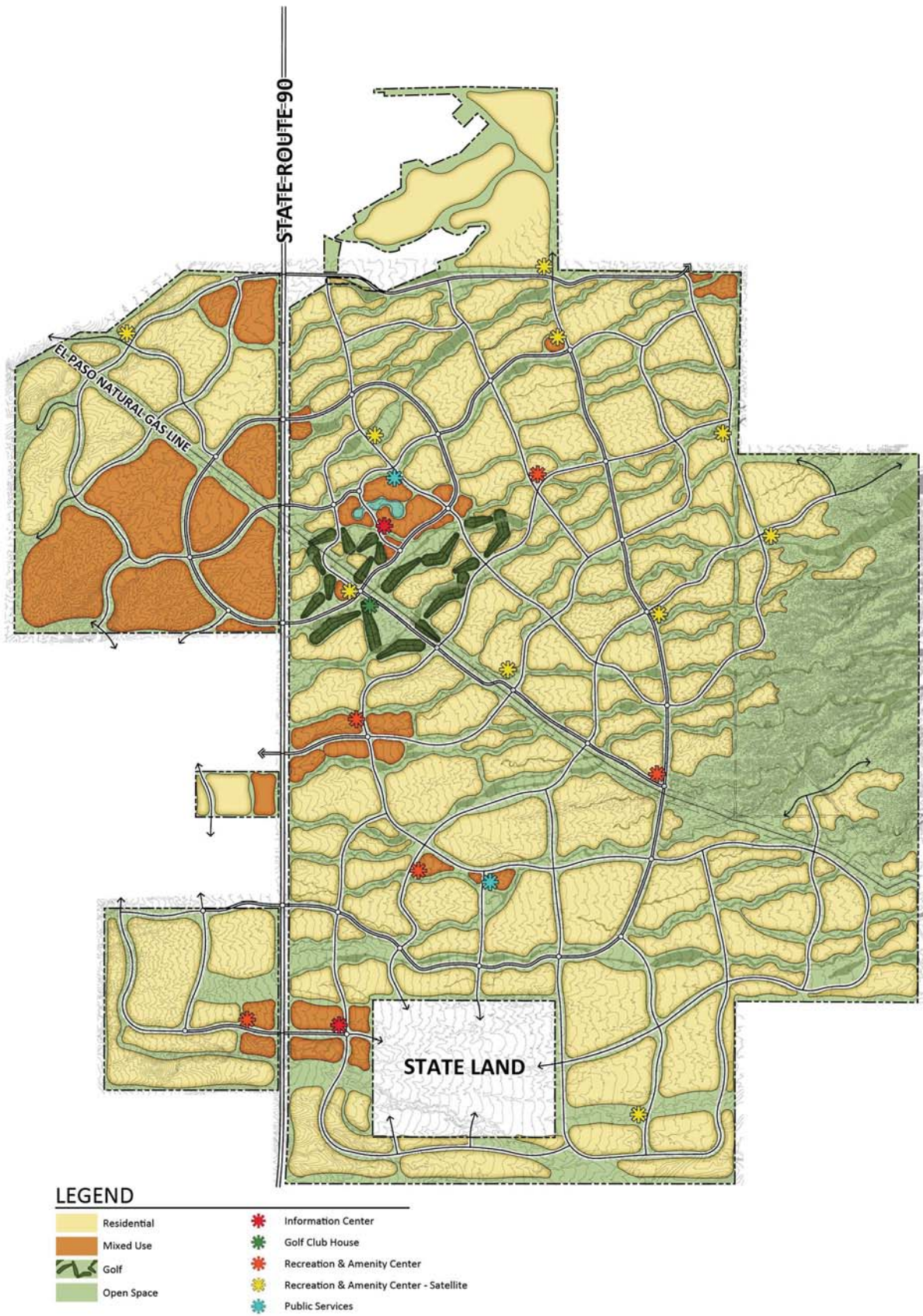


Figure 2. Site Plan and Land Use

1
not to scale

4.0 ANALYSIS OF EXISTING CONDITIONS

4.1 Physical Characteristics

SR 90 traverses through the proposed Villages of Vigneto development and is the only roadway which accesses the proposed development.

4.1.1 Roadway Characteristics

SR 90 is an interregional route originating at I 10 and traversing southeast to connect to SR80 approximately 10 miles north of Bisbee Arizona. SR 90 is the primary route between Benson, Sierra Vista and Fort Huachuca. SR 90 also traverses to Karchner Caverns about 10 miles south of I 10. SR 90 is constructed as a four lane state route with wide medians and limited access.

4.1.2 Transit Service

The proposed development is currently in a rural area; therefore, there are no existing transit services.

4.1.3 Pedestrian/Bicycle Facilities

There are no existing pedestrian/bicycle facilities on SR 90 within the project area.

4.2 Traffic Volumes

United Civil Group collected average daily traffic volumes on SR 90 south of Post Road on Tuesday July 7, 2015, for a 24 hour period. The average daily traffic count shows that during the summer season, approximately 9,120 vehicles used SR 90. In addition, ADOT collected a combined traffic volume between I 10 and the main access of Kartchner Caverns, 9,506. *Table 5. Roadway Average Daily Traffic* presents the daily traffic volumes on SR 90 within the project boundary on an average weekday.

Table 5. Roadway Average Daily Traffic

Year	Roadway	Traffic Volume (Seasonally Adjusted Traffic Volume)	Source
2015	SR 90 northbound – South of Post Road	4,581 (4,828)	United Civil Group
2015	SR 90 southbound – South of Post Road	4,540 (4,785)	United Civil Group
2015	SR 90 total – South of Post Road	9,121 (9,613)	United Civil Group
2013	SR 90 total – between I-10 and Kartchner Caverns Main Access	9,506	ADOT Multimodal Planning Division

Because counts were collected in the summer season in 2015, seasonal adjustment factors were applied to determine the average annual daily traffic volume on SR 90 in front of the proposed Vigneto Development. ADOT Multimodal Planning Division provided seasonal factor values for the southeastern Arizona Region (R2-7 south) for 2014. Because the UCG collected the traffic count during the month of July on a Tuesday, the adjustment value is 1.054. Therefore, the counts were increased by 5.4 percent to account for seasonal variations.

Based on the seasonal adjustment factor SR 90 carries approximately 9,613 vehicles per day in front of the proposed development.

4.3 Roadway Level of Service

The roadway LOS was evaluated for SR 90 using the average daily traffic volumes collected in July 2015. The methodologies according to the HCM 2010 were used to determine the LOS for SR 90 near the project site.

The existing lane geometry on SR 90 = 2 12 foot lanes in each direction
Posted Speed = 65 mph

Based on collected traffic data:

Peak Volume NB on SR 90 south of Post Road = 442

Peak Volume SB on SR 90 south of Post Road = 488

Heavy Vehicle percentage NB on SR 90 south of Post Road = 5.1%

Heavy Vehicle percentage SB on SR 90 south of Post Road = 4.9%

PHF NB on SR 90 south of Post Road = 0.96

PHF SB on SR 90 south of Post Road = 0.71

Therefore, the demand flow rate in passenger cars per hour per lane NB = 250 pc/h/ln

And the demand flow rate in passenger cars per hour per lane SB = 375 pc/h/ln

Based on table 3, the existing SR 90 operates at an LOS A in both directions near the proposed Vigneto Development.

5.0 STREET NETWORK

The proposed street network includes roadways that will provide access to and from The Villages at Vigneto development, as well as connectivity through the project site to SR 90.

The functional classification system process is used to group roadways according to the service they are intended to provide. Basic functional classifications are applied to the proposed development to make certain that the roadways are consistent and can handle the projected traffic volumes generated by the development.

5.1 Functional Roadway Network

Functional classification is the process by which roadways are grouped into classes according to the kind of service they provide. The basic functional systems used in this classification are state routes, arterials, collectors and local roadways. Using national classification terminology, these classifications are based on the trips served and the operational characteristics of the streets.

Major roadways within the study area were categorized according to the following classifications and illustrated on *Figure 3. Functional Classification of the Roadway Network*:

5.1.1 State Route

State routes provide regional access throughout the area. Typically, state routes have a posted speed of 45 mph or greater, are divided, and provided a desired LOS of C or better. Mitigation to level of service D may be acceptable in urban areas over 50,000 population at the discretion of the Regional Traffic Engineer with the concurrence of all affected municipalities. State routes are usually controlled by an access management plan.

5.1.2 Arterial

The arterial system should interconnect with the State Route 90 and collector streets to provide service of trips of moderate length. The arterial system includes all arterial type roadways and contains facilities that place emphasis on land access and offer a lower level of traffic mobility. The system should include urban connections to collector roads. The spacing of arterial streets may vary from ½ mile in the central business district to 2-3 miles on the urban fringe, but should normally be not more than 1 mile in developed areas.

5.1.3 Collector

The collector street system provides land access service and traffic circulation within residential neighborhoods, commercial and industrial areas. It differs from the arterial system in that facilities on the collector system may penetrate residential neighborhoods, distributing trips from the arterials through the area to the ultimate destination. Conversely, the collector street also collects traffic from local streets in residential neighborhoods and channels it into the arterial system.

The proposed roadway network for The Villages at Vigneto is illustrated on *Figure 3. Functional Roadway Classification*. The roadway functional classification system proposed is in alignment with the Benson Small Area Transportation Study's vision of the study area.

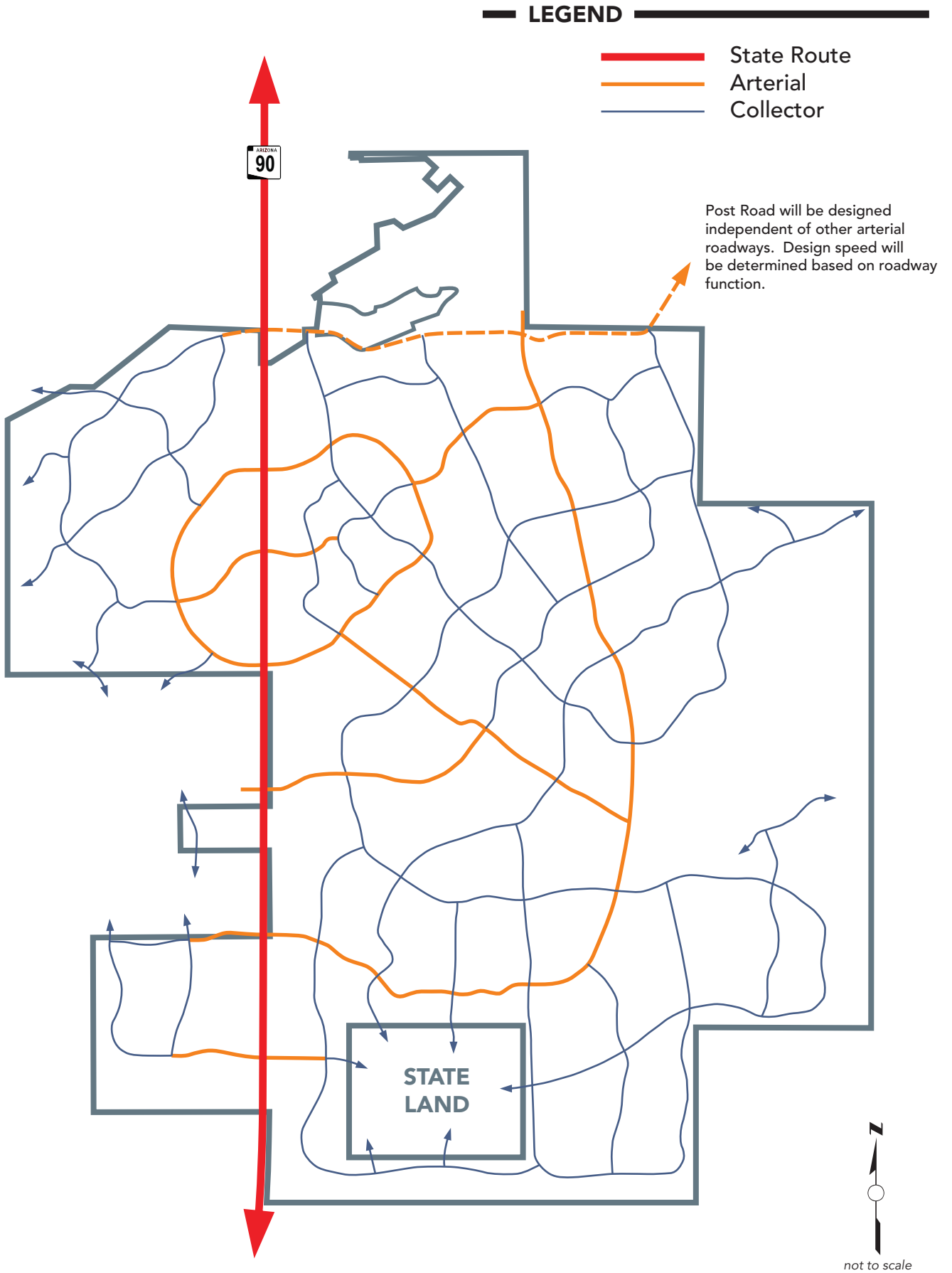


Figure 3. Functional Roadway Classification

6.0 ROADWAY GUIDELINES

The purpose of this chapter is to provide general guidelines for the planning and design of interior roadways, driveway locations and access control within the Villages at Vigneto.

6.1 Cross Sections

Cross sections for the roadways per functional classification are provided in *Figure 4: Cross Sections*. However, should severe constraints make preferred widths impossible to achieve then *Table 6. Lane Widths* may be used, as an absolute minimum, based on approval by the City Engineer, depending upon jurisdictional responsibility. If minimum widths are used, the design engineer should prepare a memo detailing why the cross section widths were modified from the cross sections.

Table 6. Lane Widths

Lane Type	Preferred Width (feet)	Minimum Width (feet)
Parking Lane	10	8
Right Thru Lane Without Curb	12	11
Right Thru Lane With Curb	14	12
Left Thru Lane With Median	14	12
Other Thru Lanes	12	11
Painted TWLTL	14	12
Left Turn Lane	12	10
Right Turn Lane Without Curb	12	10
Right Turn Lane With Curb	14	12
Shoulder	12	10
Multi-use Lane on Roadway With Gutter	7	6.5
Multi-use Lane on Roadway Without Gutter	7	6.5

The values in Table 6 do not apply to SR 90 and are not associated with ADOT. See Chapter 9. Access Management Plan for details on the future configuration of SR 90.

6.2 Design Speeds

The design of geometric features such as horizontal and vertical curves will depend upon the design speed selected for the street. The choice of the design speed is primarily determined by the street classification. The design speed is the maximum recommended speed at which reasonable safe operation of a vehicle can be maintained over a specific section of a roadway when conditions are favorable that the design features govern. Design speeds for the various classifications of roadway may be found in *Table 3. General Speed Limit Criteria*. Note that design speeds are typically 5-10 mph over the anticipated posted operation speeds.

Post Road should be designed independent of other arterials within the Vigneto Development because this roadway will serve neighboring traffic. The Post Road design speed should be

determined based on anticipated traffic volumes and roadway function, and may be higher than that shown in Table 3.

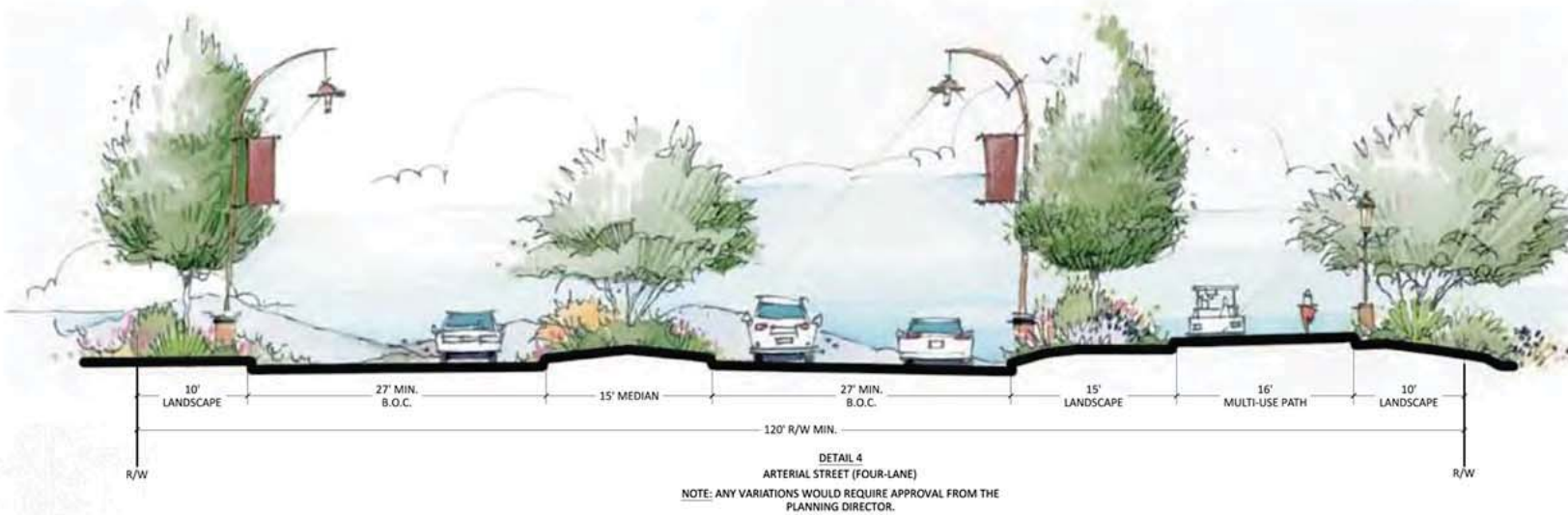
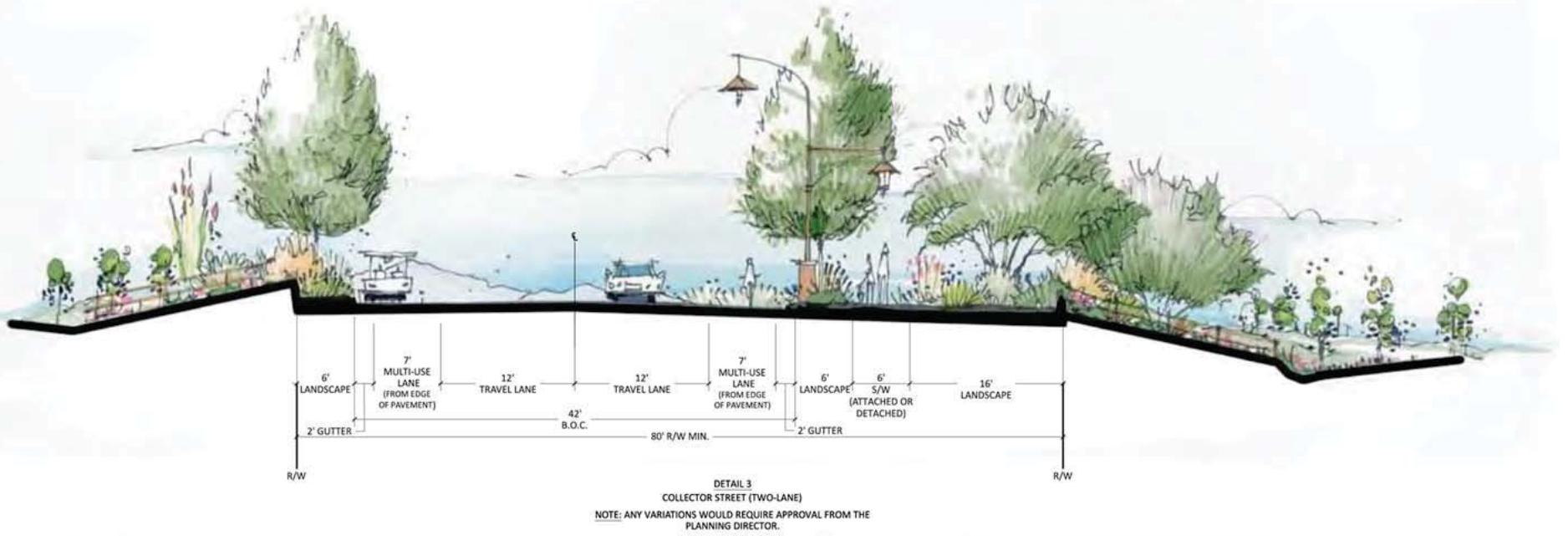
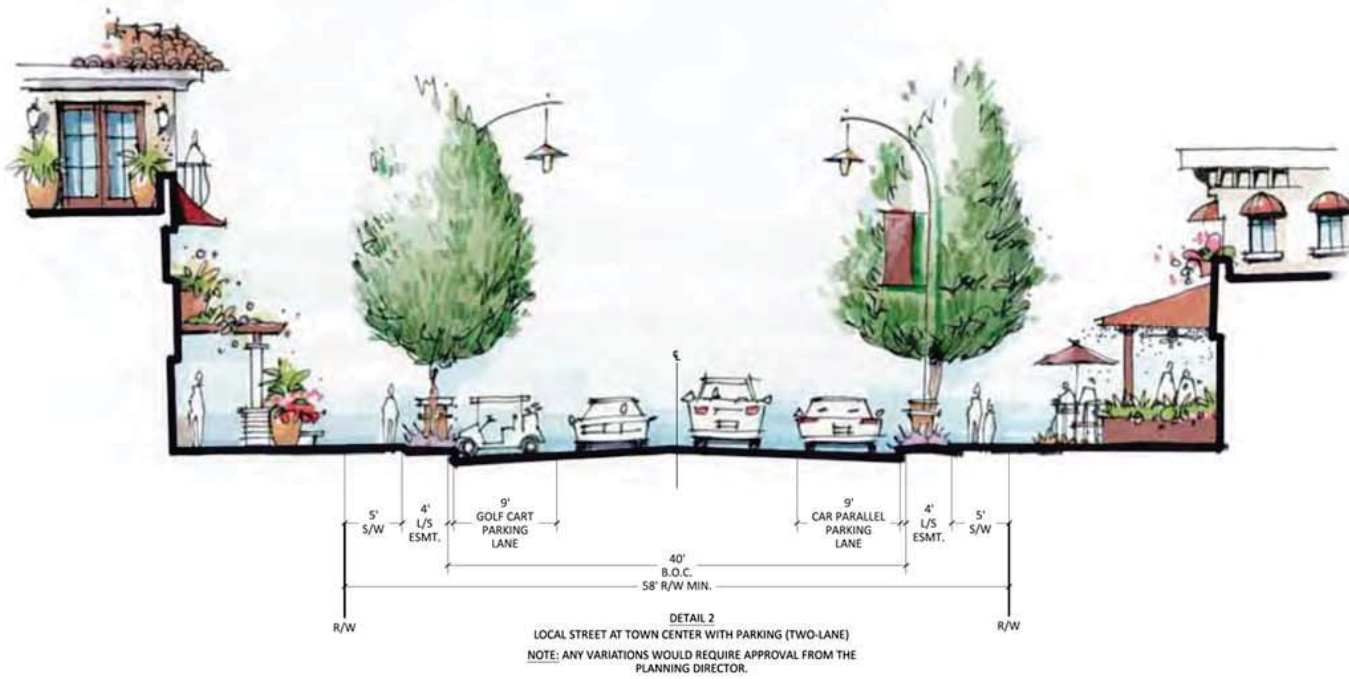
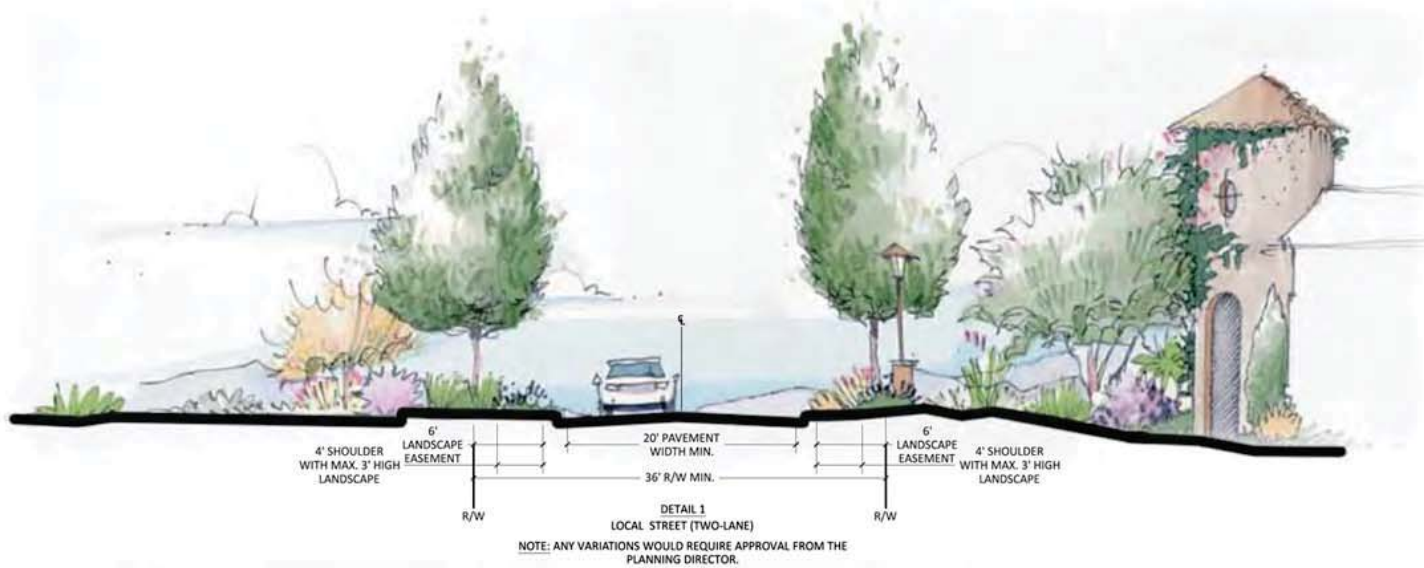


Figure 4. Cross Sections

Table 7. General Speed Limit Criteria

Classification	Design Speed (mph)	Posted Speed (mph)
Arterial	45 mph desirable 40 mph minimum	35 mph
Collector	35 mph desirable 30 mph minimum	25-30 mph
Local	30 mph desirable 25 mph minimum	25 mph

6.3 Intersections

The interior roads should intersect each other as specified in the Street Design Standards as presented in the CMP. The preliminary intersection layouts for Vigneto are presented in Figure 5.

6.3.1 Signalized Intersections

Signalized intersections should preferably be spaced at half mile interval, with quarter mile intervals as a minimum. Non-signalized intersections should be spaced at least 660 feet apart on collector and arterial roads. Generally, two adjacent "T" intersections should be avoided. It is desirable to align the two intersections to create a single 4-legged intersection. If alignment of two "T" intersections cannot be accomplished, adjacent "T" intersections shall have a minimum distance of 660 feet between them, or the minimum storage and taper requirements based on future traffic volumes for back to back left turn lanes.

Arterials should desirably have straight approaches between the intersection and horizontal curves. For additional information see the Street Design Standards in the CMP.

Traffic signals should only be installed at major intersections when warranted according to the Manual on Uniform Traffic Control Devices (MUTCD).

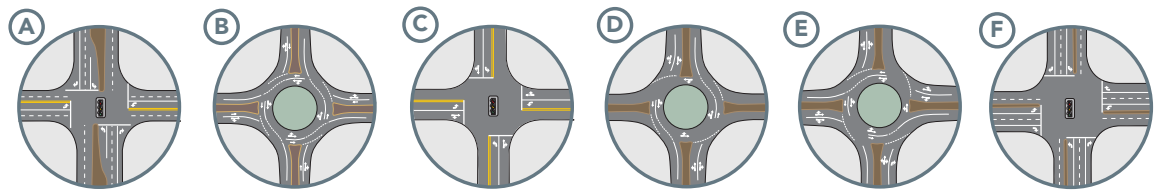
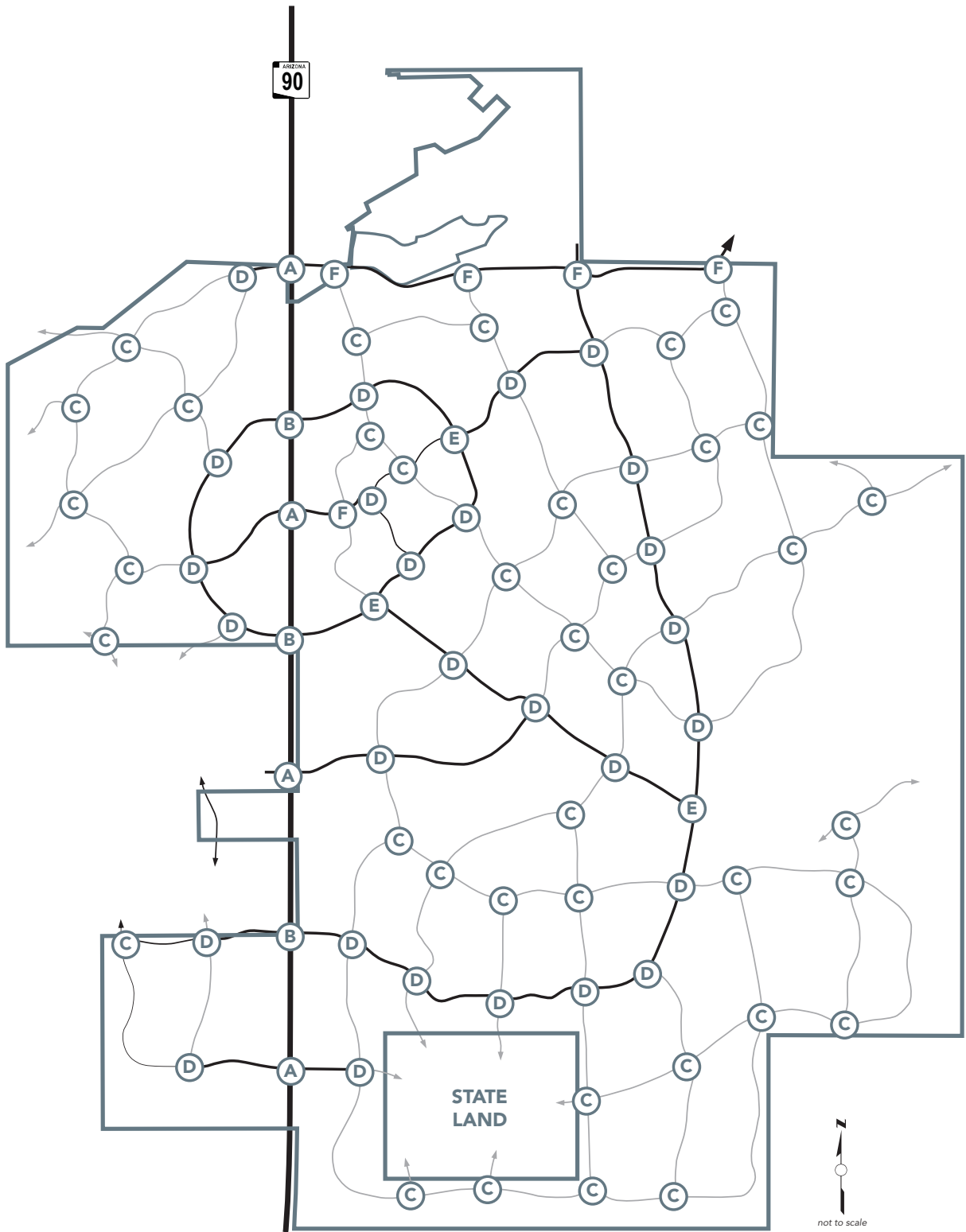


Figure 5. Intersection Layouts

6.3.2 Round-about Intersections

The use of roundabouts as a preferred traffic control mode is desirable in the following situations.

- Community Enhancement –used as a gateway treatment to convey a change in environment or land use.
- Operational Improvements – used in locations where a roundabout traffic control mode provides better performance than other traffic control modes, such as a stop sign or traffic signal.
- Traffic Calming –limited to roundabouts located at local street intersections.
- Special Situations – limited to areas where unique alignment and/or geometric constraints make it impractical to use traditional traffic control modes.

The capacity of a roundabout is analyzed based on the design parameters. The number of entry lanes depends on the future capacity needs. Generally, roundabouts reduce right angle crashes and left turning crashes do not occur. Additionally, rear end crashes become less frequent because roundabouts have less queuing. To provide good vehicle path deflection, an important safety design feature that slows traffic on entry entails aiming the approach roads toward left of the central of the central island and veer right just before the yield signs. *Figure 6. Roundabout Geometric Design Features* illustrates the geometric design features of a roundabout.

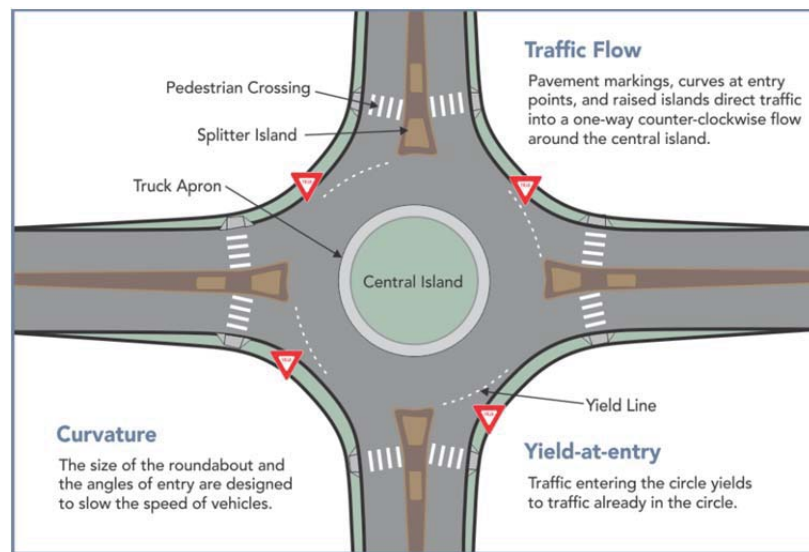
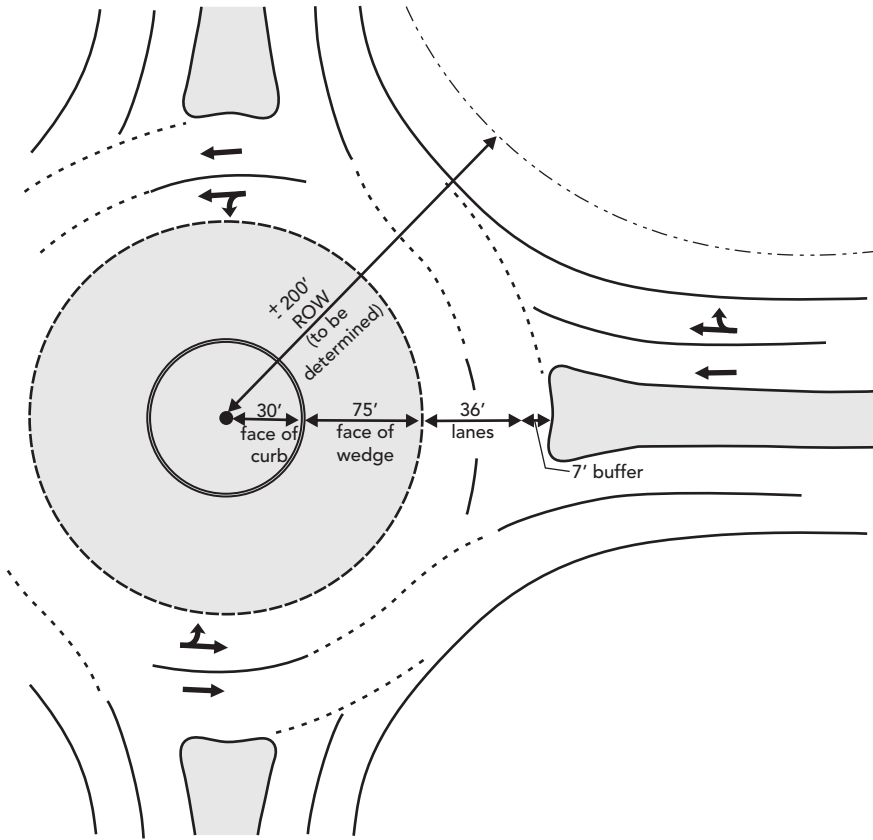


Figure 6. Roundabout Geometric Design Features

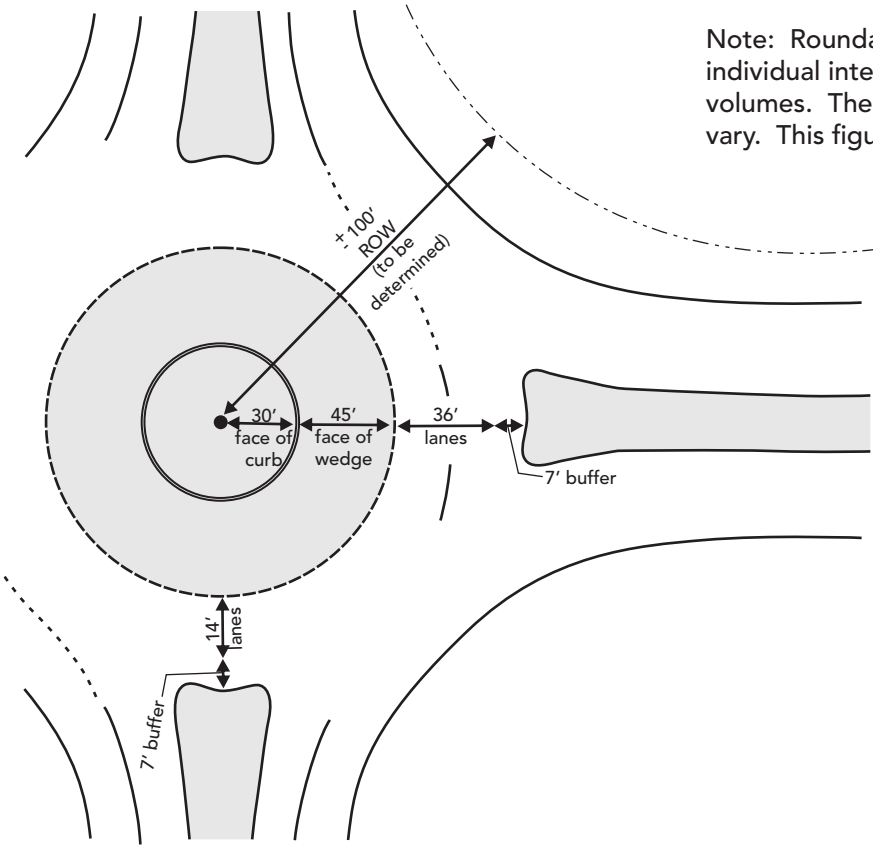
Because each roundabout is unique and provides a specific need for the traffic volumes and turning movement percentages it accommodates, intersection geometry, and purpose, each must be designed individually. Figure 7. Preliminary Roundabout Dimensions provides a guide in the preliminary layout of roundabouts on SR 90 and at arterial locations within The Villages at Vigneto.

For schematic purposes only - not to scale



SR90

Note: Roundabouts will be designed for each individual intersection based on traffic volumes. Therefore, lane configurations will vary. This figure is an example only.



Arterial

Figure 7. Preliminary Roundabout Dimensions

6.3.3 Exclusive Turn Lanes

Left and right turn exclusive turn lanes should be considered on all approaches to signalized intersections. Left turn lanes should be provided on all approaches to intermediate intersections, and right turn lanes should be considered where warranted by projected traffic demands at arterial-collector and arterial-local intersections. In no case should the minimum storage length be less than 75 feet for unsignalized intersections or 125 feet for signalized intersections. All transition lane tapers should be designed with an 8:1 taper for design speeds of 30mph or less and 15:1 for design speeds over 30 mph.

6.3.4 Driveway Location and Design

When developing specific phases of The Villages at Vigneto, driveway location is an important operational factor to consider.

- The location of a driveway should not interfere with the safety and traffic operations on the adjacent roadways.
- The width and radii of a driveway should be designed to accommodate entering and exiting vehicles efficiently and safely.
- The number of driveways should be limited to minimize traffic conflicts.
- Driveways should be spaced to allow for efficient operation.
- Driveway locations should be integrated into the on-site circulation patterns to allow proper ingress and egress and to avoid unnecessary queuing on the adjacent roadways.
- Sight distance must be adequate at all driveways.

Driveways should be consolidated where applicable to limit the number of driveways per mile along a roadway and provide adequate spacing between driveways in order to reduce the number of conflicts.

- *Corner Clearance* – This involves providing adequate corner clearance by keeping or moving driveway entrances away from intersections. Improving corner clearance reduces conflicts that cause rear-end crashes. Where applicable, driveways should be moved from the main streets to side streets to clear corners.
- *Continuous Two-way Left Turn Lanes* – An additional dedicated left turn lane can be provided in the center of the street to separate left turning traffic from through traffic. Generally, these lanes are used where moderate levels of left turns occur.
- *Raised Medians*– Raised medians provide a barrier near intersections to prevent some turning movements into driveways. This strategy reduces conflicts near the intersection.

6.4 Path System

An extensive path system is proposed for The Villages at Vigneto. The paths are proposed on collector roadways (multi-use lanes) and adjacent to arterial roadways (multi-modal paths) connecting residential areas to activity centers. Low speed vehicle (LSV) drivers will be encouraged to use the path system throughout the development. Therefore, these paths will

be designed for LSV and electric vehicles as well as bicycles and pedestrians. When designing the path system, the following factors should be considered:

- *Safety:* The safe provision of multi-modal travel is the highest priority. This should be considered in all aspects of design to ensure that proper facilities are provided and users are visible to drivers. Adequate sight distance should be considered at all intersections for both LSV drivers and vehicular drivers.
- *Linkage Between Destinations:* The Village at Vigneto will provide key activity centers, recreation, parks, commercial areas and medical facilities. The trail system should be designed to connect important destinations while making each trip an enjoyable experience.
- *Mobility Challenges:* Provisions of enhanced transportation trails may provide mobility for people who prefer not to drive or are unable to drive. Provision of ADA compliant facilities ensures that people with disabilities will have more mobility options. These are important considerations for Vigneto.
- *Recreation:* Provision of multi-use lanes ensures healthy recreation choices for residents. The design should consider various types of users and their needs including the material type used in the final design.

7.0 PROJECTED TRAFFIC

Future traffic volumes generated by the proposed Villages at Vigneto are presented in this chapter for site buildout.

7.1 Transportation Planning Model

TransCAD, a macroscopic computer model was used to forecast traffic volumes generated by The Villages at Vigneto development. TransCAD is a traffic engineering software used in transportation planning applications. TransCAD uses a network data structure to support routing and network optimization models. TransCAD includes trip generation, distribution, mode choice, and traffic assignment models that support transportation planning and travel demand forecasting. TransCAD has a set of dynamic segmentation and referencing tools for managing roadway networks.

The basic design of the transportation model prepared for this project was the four step travel demand model. The four steps include:

1. *Trip Generation* - uses socioeconomic data to determine the number of trips produced by a traffic analysis zone (TAZ). The socioeconomic data normally includes population, auto ownership, and employment information at the very least.
2. *Trip Distribution* - once the number of trips is known, trip distribution determines where the trips will go. This step takes in to account the number of trip productions and the number of trip attractions per TAZ.
3. *Mode Choice* - determines what vehicle trips will utilize when going from one zone to another. For this modeling effort, transit opportunities were not included in the model because Vigneto will not be significantly served by public transportation.
4. *Trip Assignment* - this step takes all of the trips and assigns them to a transportation network.

A roadway file and a land use file were created in TransCAD. The roadway file incorporated major roadways proposed within the Vigneto Development and was created using the site plan as shown in the Final Vigneto CMP. Roadway attribute data for the selected roadways (capacity, number of lanes) were entered into the underlying GIS data. Model runs did not include capacity constraints in order to evaluate the actual travel demand rather than capacity constrained volumes.

Land use information within the study area was created by dividing The Villages at Vigneto into TAZs. TAZs serve as the smallest unit of area from which trips begin or end and are the basic unit for which data from the trip generation element of the model is defined. Information tied to each TAZ includes the number of dwelling units, estimates of population and estimates of employment. Figure 8. Traffic Analysis Zones show how the model was prepared.

As each phase of development is defined, the transportation model will need to be refined to include collector routes within each area. Therefore, as the development progresses through to

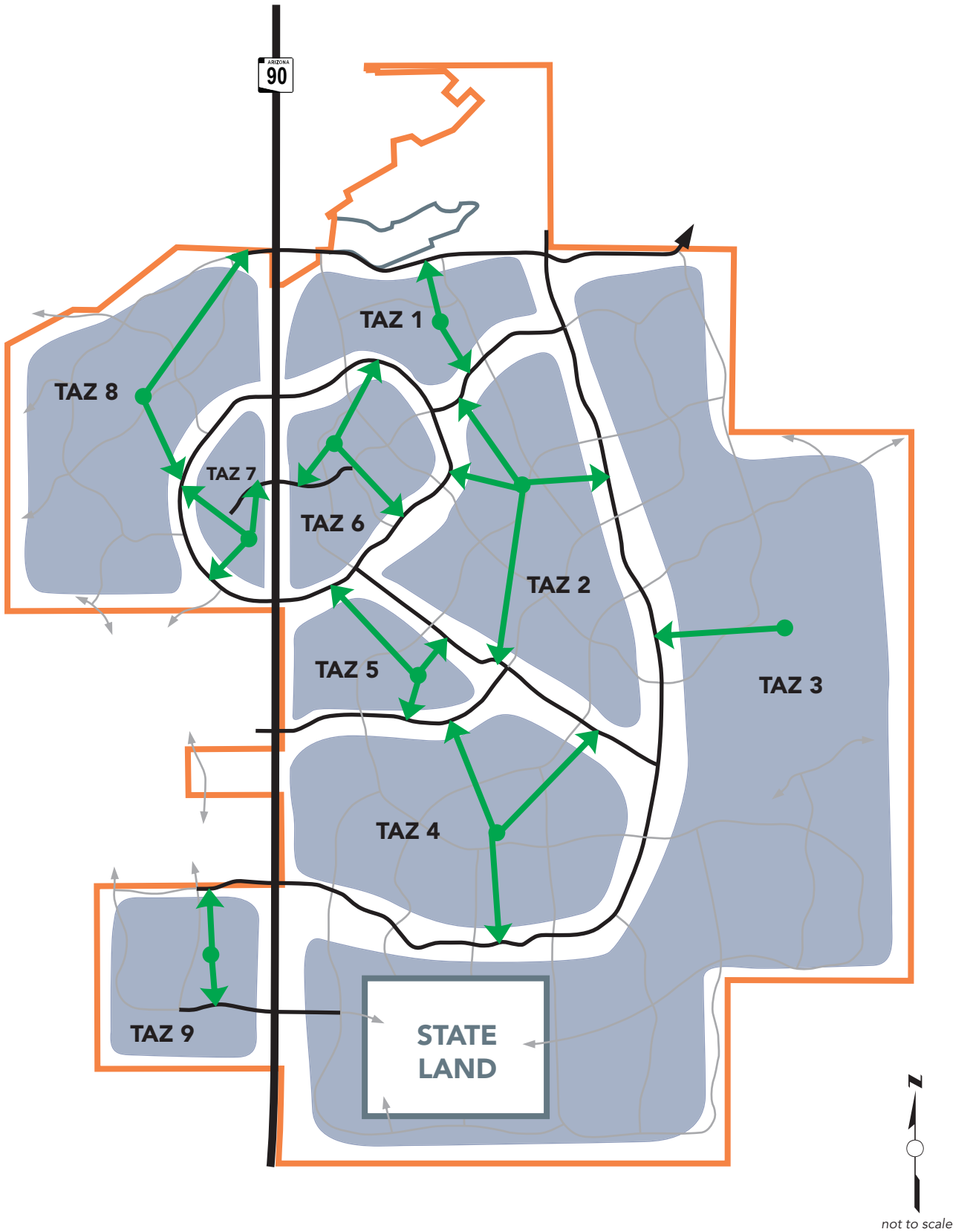


Figure 8. Traffic Analysis Zones (TAZ)

completion, the model will more accurately reflect actual conditions and anticipated roadway and intersection levels of service.

7.2 Trip Generation

Trips were generated in the model based on the methodologies outlined in the National Cooperative Highway Research Program 187 (NCHRP 187), commonly referred to as the Quick Response Method (QRM). The methodology utilizes national averages as the basis for trip rates. These trip rates are expressed as cross classification tables segmented by the size of the urban area, household income and auto ownership. The QRM includes trip rates for three trip purposes:

- Home-based work trips (HBW)
- Home-based non-work trips (HBNW)
- Non-home-based trips (NHB)

Output of the QRM is expressed as the number of person trips produced per traffic analysis zone for each of the three trip purposes.

Data requirements for the QRM include:

- Number of households within each TAZ (Production)
- Dwelling units within each TAZ (Attraction)
- Retail employment within each TAZ (Attraction)
- Non-retail employment within each TAZ (Attraction)

Based on a preliminary traffic impact meeting held at ADOT on Wednesday, June 3, 2015, with the ADOT District Engineering and Regional Traffic Engineer, the *ITE Trip Generation Manual* was agreed upon as the guiding manual to develop trip generation rates for the Vigneto Development. Therefore, estimates of the traffic volumes that will be generated by the proposed development were determined using the Ninth Edition of the *Trip Generation Manual* published by the Institute of Transportation Engineers (ITE). This publication provides estimates for traffic generation based on studies that measured the actual traffic that was generated by various types of land uses and is considered the standard for determining traffic generation.

As an overall guide and for this Mater Transportation Plan, the anticipated Villages at Vigneto land use allocations consist of the following:

Residential

Active Adult (75%) – 21,000 dwelling units

Single Family Housing (25%)– 7,000 dwelling units

Mixed Use

Retail– 100 acres

Commercial and Offices – 213 acres

Town Center – 115 acres
 Resort – 250 acres

Infrastructure, Civic, Recreation, and Schools

Hospital – 40 acres
 Healthcare – 10 acres
 Places of Worship – 12 acres
 Elementary School – 50 acres
 High School – 50 acres

Because specific site plans are not developed for The Villages at Vigneto a 15% floor to land area ratio (FAR) was used to calculate building sizes. A FAR of 10% was used for the school sites to account for ball fields and playgrounds. These are typical values for planning purposes.

The ITE land use codes and rates are shown in Table 8: Trip Generation Rates that were used to project the trip generation for the build-out of the Villages at Vigneto.

Table 8: Trip Generation Rates

ITE Land Use	ITE Land Use Code	Trip Generation Rate		
		Daily	AM Peak	PM Peak
Single Family Homes	210	9.52 x dwelling units 50% enter, 50% exit	0.75 x dwelling units 25% enter, 75% exit	1.00 x dwelling units 63% enter, 37% exit
Senior Adult Housing - Detached	251	3.68 x dwelling units 50% enter, 50% exit	0.22 x dwelling units 35% enter, 65% exit	0.27 x dwelling units 61% enter, 39% exit
Specialty Retail Centers	825	44.32 x (1,000 Sq Ft) 50% enter, 50% exit	Retail is not usually open for business during the AM Peak	2.71 x (1,000 Sq Ft) 44% enter, 56% exit
General Office Building	710	11.03 x (1,000 Sq Ft) 50% enter, 50% exit	1.56 x (1,000 Sq Ft) 88% enter, 12% exit	1.49 x (1,000 Sq Ft) 17% enter, 83% exit
Resort *Daily trips estimated using Hotel land use (310)	330	4.5 x occupied rooms 50% enter, 50% exit*	0.37 x occupied rooms 72% enter, 28% exit	0.49 x occupied rooms 43% enter, 57% exit
Hospital	610	13.22 x (1,000 Sq Ft) 50% enter, 50% exit	0.95 x (1,000 Sq Ft) 63% enter, 37% exit	0.93 x (1,000 Sq Ft) 38% enter, 62% exit
Medical/Dental Office Building	720	36.13 x (1,000 Sq Ft) 50% enter, 50% exit	2.39 x (1,000 Sq Ft) 79% enter, 21% exit	3.57 x (1,000 Sq Ft) 28% enter, 72% exit
Church	560	9.11 x (1,000 Sq Ft) 50% enter, 50% exit	0.56 x (1,000 Sq Ft) 62% enter, 38% exit	0.55 x (1,000 Sq Ft) 48% enter, 52% exit
Elementary School	520	15.43 x (1,000 Sq Ft) 50% enter, 50% exit	5.2 x (1,000 Sq Ft) 56% enter, 44% exit	1.21 x (1,000 Sq Ft) 45% enter, 55% exit
High School	530	12.89 x (1,000 Sq Ft) 50% enter, 50% exit	3.06 x (1,000 Sq Ft) 71% enter, 29% exit	0.97 x (1,000 Sq Ft) 54% enter, 46% exit

Source: ITE Trip Generation Manual, 9th Edition

The resulting vehicle trips that will be generated by the proposed development are presented in Table 9: Site Generated Traffic. This table does not include pass-by or internal capture trips.

Table 9: Site Generated Traffic

Land Use	Size	Units	Daily	AM Peak			PM Peak		
				in	out	total	in	out	total
Single Family Homes	7,000	dwelling units	66640	1313	3938	5250	4410	2590	7000
Senior Adult Housing - Detached	21,000	dwelling units	77280	1617	3003	4620	3459	2211	5670
Specialty Retail Centers	1,400	1000 sq ft	62048	0	0	0	1669	2125	3794
General Office Building	1,400	1000 sq ft	15442	1922	262	2184	355	1731	2086
Resort *Daily trips estimated using Hotel land use (310)	800	occupied rooms	3600	213	83	296	169	223	392
Hospital	260	1000 sq ft	3432	156	91	247	92	150	242
Medical/Dental Office Building	65	1000 sq ft	2348	123	33	155	65	167	232
Church	80	1000 sq ft	729	28	17	45	21	23	44
Elementary School	215	1000 sq ft	3317	626	492	1118	117	143	260
High School	215	1000 sq ft	2771	467	191	658	113	96	209

Because this is a 20 year plan, land uses changes may occur over the project life. Therefore, this Master Transportation Plan should be updated, as necessary, to reflect land use changes and more accurately project traffic volumes over the next 20 years.

Following the preparation of the trip generation data, TransCAD was utilized to match trip attractions with available trip productions thereby balancing the total number of trips, by holding the productions. In practice, the production models are considered to be more accurate predictors of reality, so productions were held constant, or nearly constant while the attractions were adjusted to balance the roadway network.

7.2.1 Internal Capture Rates

Any area with a mix of both residential and non-residential use, and especially those developments that span a large geographic area can be expected to internally satisfy or capture a portion of traffic on-site. A significant portion of the residential traffic is internal to the project, with destinations to the local school, neighborhood commercial centers, retail shopping areas in the town center, and employment uses within the site. The distribution of residential trips expressed as a percentage of the total residential trips by type of trip activity was used to estimate the internal assignment.

Internal assignments or capture rates utilized for the Vigneto development were based upon residential trip purpose data contained in the Analysis of Add-on 2008 National Household Travel Survey (NHTS) Dataset for MAG Region. The data identified the percentage of home-based work trips, home-based shopping trips and home-based other trips. The following percentages are directly taken from the MAG Add-on Household Data 2008

- Using weighted data, approximately 24% of the households have no workers, 48% have one worker, 23% have two workers and 5% have three or more workers.
- Using weighted data, 8% work only from home.
- Using weighted data, approximately 49% of the respondents shop on-line.
- The 2008 NHTS shows approximately 9.6% of home based work trips, 58.1% are home based other and 32.2% are non-home based trips.
- About 65% of all reported trips have duration of at most, 15 minutes.
- About 42 % of all reported trips have a trip lengths of at most 3 miles.
- The average reported trip length for HBW trips (all days) was about 12.6 miles.

Using the above information in combination with proposed land uses within the Vigneto development, internal capture rates for the land uses were developed. Home-based school, church and shopping trips are expected to be primarily oriented to origins and destinations within Vigneto. Approximately 30% of all work trips are home-based work trips are expected to be internally satisfied. Approximately 80% of the home based other were assigned to and from internal origins and destinations. The percentage of trips assigned to non-residential destinations within the Vigneto development are as follows:

- 30% of the work trips are internal to Vigneto
- 80% of the shopping trips are internal to Vigneto
- 75% of the school and church trips are internal to Vigneto
- 60% of the recreation trips are internal to Vigneto
- 50% of the medical trips are internal to Vigneto
- 30% of the family trips are internal to Vigneto

Additionally, 15% of the trips generated by the employment uses were assumed to remain internal to the site, to reflect interaction between office, municipal, commercial and other service uses. This portion of the trip generation of the employment uses was assigned to the

internal retail commercial uses with corresponding adjustments to the retail/commercial land use trip generation.

The remaining residential and non-residential trips of the total trip generation of the development are external to the development, with approximately 40,000 vehicles entering and exiting The Villages at Vigneto daily. These trips were also adjusted for LSV see 7.2.2 below.

7.2.2 Low Speed Vehicle (LSV) Trips

The Villages at Vigneto will be developed with a community wide path system. The path system is designed to encourage residents to get out their vehicles and choose an alternate form of travel within the community. The path system will allow use by LSV, walkers, hikers, cyclists and equestrians. The extensive path system is planned for portions of the Kinder Morgan Gas Line easement and adjacent to many of the arterial roadways (multi-modal pathways). Collector roadways are designed with 7 foot multi-use pathways along the roadway. The multi-modal pathways and the multi-use pathways create the community path system.

Communities in other parts of the United States that have developed extensive path systems throughout their communities and have seen an 80% reduction in internal trips because of the extensive LSV use (The Villages - Florida, 2015).

Because this is a new concept in Arizona, a 60% reduction in internal trips was estimated due to LSV use and promoting an active lifestyle within the community.

LSVs in the community will follow the same traffic laws as cars, including regulatory signs and the use of directional or hand signals when making turns. To operate a LSV at night or before sunrise, the vehicle must be equipped with headlights, brake lights, turn signals, and reflective warning devices on the front and rear sides of the vehicle.

The LSVs should be restricted to the path system. When LSVs are traveling adjacent to the arterial roadways they should be in the multi-modal paths. The LSVs should also be restricted to cross arterials only at designated intersections. On collector streets, LSVs should be driven in the marked multi-use lanes or along the right edge of the street if there is no marked lane. LSVs should not be permitted on sidewalks within the community.

7.2.3 Pass-by Trips

Trips passing by the site, already on SR 90 were accounted for in the trip generation. It was assumed that 10% of the trips already on SR 90 in front of the site would stop and make an additional trip and continue on to their original destination. Therefore, these trips are reduced from the volumes currently on SR 90. However, pass-by trip turning movements are still incorporated into the calculations as they do affect the volume of cars moving into the driveways or intersections of the site.

7.3 Background Traffic

It is assumed that traffic volumes on SR 90 will increase by 1 percent per year, without the addition of the Vigneto Development. Therefore, by year 2035, background traffic will increase to an AADT of approximately 11,800 vehicles.

7.4 Trip Distribution

External trips are those that have at least one trip end outside the development. In this analysis 5 external trip stations were identified based of the future roadway network. The external stations are shown below:

- I-10 west to Tucson area – 35%
- I-10 east to Wilcox area – 5%
- SR 90 north to the Benson Airport – 5%
- SR 90 south to the Fort Huachuca/Sierra Vista area – 30%
- Post Road east to the Benson area – 10%
- Ocotillo Road north to Benson area – 15%

Distribution to these stations was estimated based on available census data and distance to activity centers relative to employment opportunities and recreational activities. *Figure 9: Trip Distribution and Trip Assignment* illustrates the trips distribution percentages.

7.5 Post Road

Post Road has been defined as a road of local connectivity in the Benson Small Area Transportation Study (SAT). The by mid year, 2020, the Benson Plan shows that Post Road will begin to provide connectivity to SR 80 and SR 90. By 2030, the long range plan shows that Post Road will connect the two state routes, 80 and 90, providing local access. The Benson SAT projects that approximately 15,000 vehicles will use Post Road, daily. The Transcadd model shows that approximately 5,500 vehicles from the Vigneto development will use Post Road daily. The remaining vehicles are projected to be background traffic that will likely use Post Road once it is constructed and provides the local connectivity between SR80 and SR90.

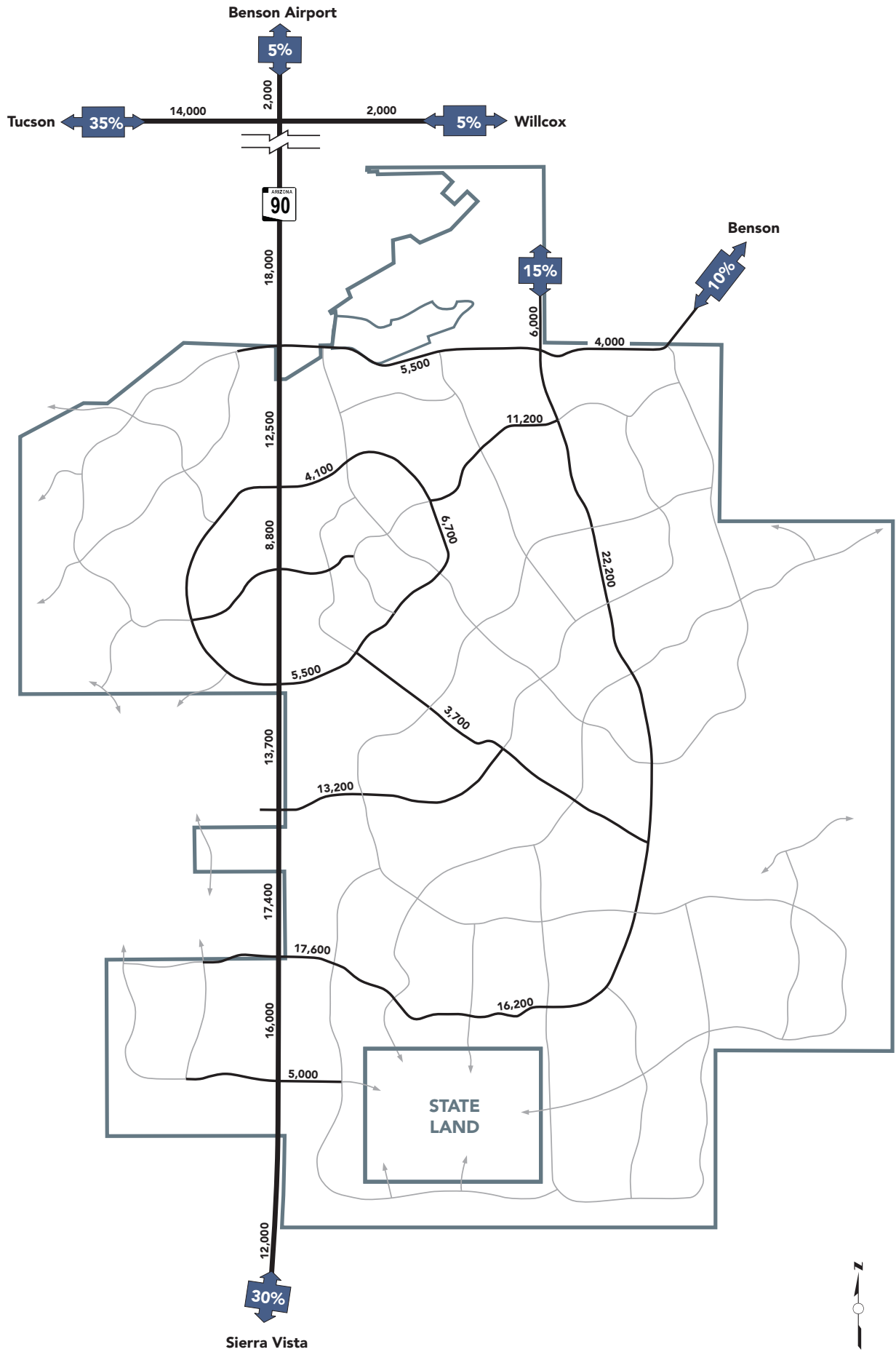


Figure 9. Trip Distribution and Trip Assignment

7.4 Trip Assignment

External trips were assigned to the TAZs based on the shortest route using an equilibrium assignment. This assignment algorithm provides for an iterative process to achieve a convergent solution in which no traveler can improve their travel time by shifting routes. The resultant internal and external site generated traffic volume projections for the Villages at Vigneto are presented on Figure 8.

8.0 PLANNING LEVEL TRANSPORTATION NEEDS

The proposed roadway network for The Villages at Vigneto consists of a structured arterial, collector, local road system to provide internal circulation and access to the regional road network. Thorough planning of the internal roadway network results in efficient traffic operations and reduces the need for future construction.

8.1 Roadway Levels of Service

Using the proposed functional classification system as shown in Figure 3 and the projected traffic volumes shown in Figure 8, the roadway level of service concepts were applied to make certain that the roadways and cross sections can adequately carry the future projected traffic volumes. The arterial roadways analyzed in this Master Transportation Plan are shown combined with the proposed roadway laneage and the roadway planning levels of service are provided on Figure 9. Roadway and Intersection Planning Levels of Service. Levels of service for planning documents were calculated using the HCM methodologies presented in section 2.2 show the roadway will operate at a LOS C or better with a FFS of 50 mi/hr. The corresponding link levels of service and the densities in (pc/hr/ln) are presented on Figure 10.

8.2 Intersection Layouts

Planning level intersection analyses were prepared for the proposed seven intersections that intersect SR 90. In order to evaluate and recommend intersection layouts, peak hour traffic volumes were developed based on the daily traffic volumes. Inbound and outbound peak hour traffic volumes were calculated for each TAZ based on the land use type and associated trip characteristics. The TransCAD Model for Vigneto was used to extract limited turning movement percentages at each intersection.

For the access points along SR 90, the background volumes were added to the site generated traffic to reflect non site travel on SR 90. The collected traffic volumes on SR 90 were increased by 1% per year to reflect growth along the corridor. Generally, a 2% growth rate is used; however, this growth rate would account for Vigneto trips which are actually added in the site generated traffic.

ADOT MPD provided traffic projections for year 2040 from the approved Year 2040 Sierra Vista Transportation Focus Model as presented in Figure xx. Socioeconomic data was included in this model for the Vigneto Development. The model was developed by ADOT MPD and the Sierra Vista MPO for use in estimating future growth within the area. UCG will work closely with ADOT MPD to update the year 2040 SVMPO Focus Model as Vigneto more clearly defines their land uses. For this Master Transportation Plan, the preliminary Transcadd model prepared for Vigneto actually estimates a higher volume of trips on SR 90 and will therefore be used in this analysis until the ADOT/SVMPO model is updated.

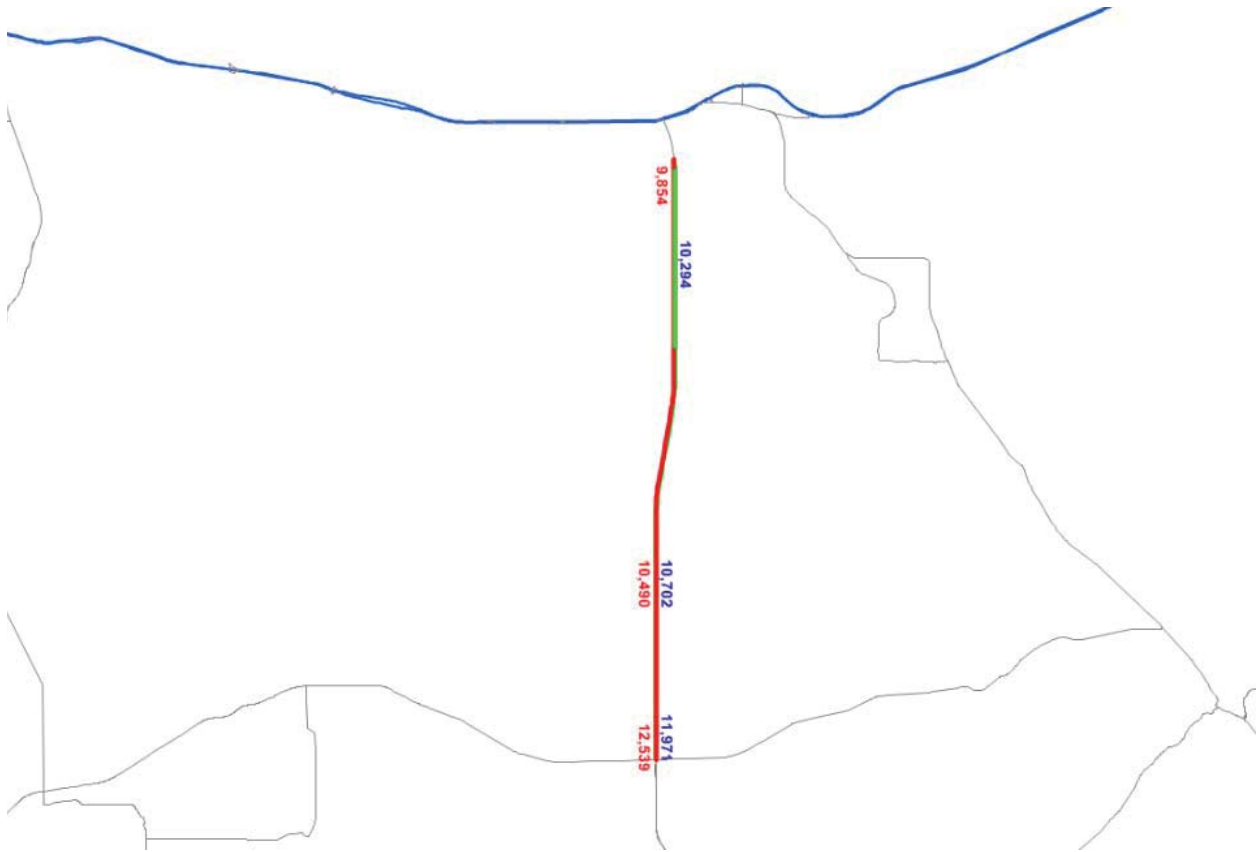


Figure 10: Year 2040 ADOT MPD/SVMPO Focus Model

The peak hour turning movement volumes for SR 90 are shown on *Figure 9. Roadway and Intersection Levels of Service* along with the levels of service. The peak hour volumes were determined using ADOT Multimodal Planning Division (MPD) k and D factors developed for SR 90 between I-10 and the Kartchner Caverns main access. Based on ADOT MPD's HPMS Location Report for Year 2013, the k factor is 10% and the D factor is 51%. The k factor (30th highest hourly volume) is expressed as a percentage of the AADT volume and is commonly used to calculate the design hour volume. Therefore this was used to determine the peak design hour volume for preliminary intersection planning efforts. The D factor is the percent of traffic moving in the peak travel direction during the 30th highest hourly volume. Therefore, this factor was used to determine traffic volume splits to the north and south on SR 90. These preliminary planning peak hour turning movement volumes were then input into Synchro, a traffic engineering software that analyzes, simulates, and optimizes intersections and roundabouts. Additionally, progression analyses were run to determine the levels of service for the SR 90 corridor.

Because the analyses are based on planning level forecasts, storage turn lane lengths, signal timing, turning movement delays and queue lengths are not reported. As development progresses and specific sites are planned, traffic impact studies should be prepared that define the specific road geometrics required for the proposed developments.

Based on the Synchro analyses, dual left turn lanes may be required on SR 90 in the northbound and southbound directions at the analyzed signaled intersections by year 2035. Additional analyses should be prepared at future development phases to confirm the need for dual left turn lanes.

Roundabouts were analyzed using Synchro with the HCM 2010 methodologies and show that they operate at an acceptable level of service on SR 90 and within the proposed development. Roundabouts are unique and should be specifically designed for each intersection.

Figure 11 presents the 2035 forecasted turning movement volumes at the proposed intersections on SR 90 along with roadway and intersection LOS.

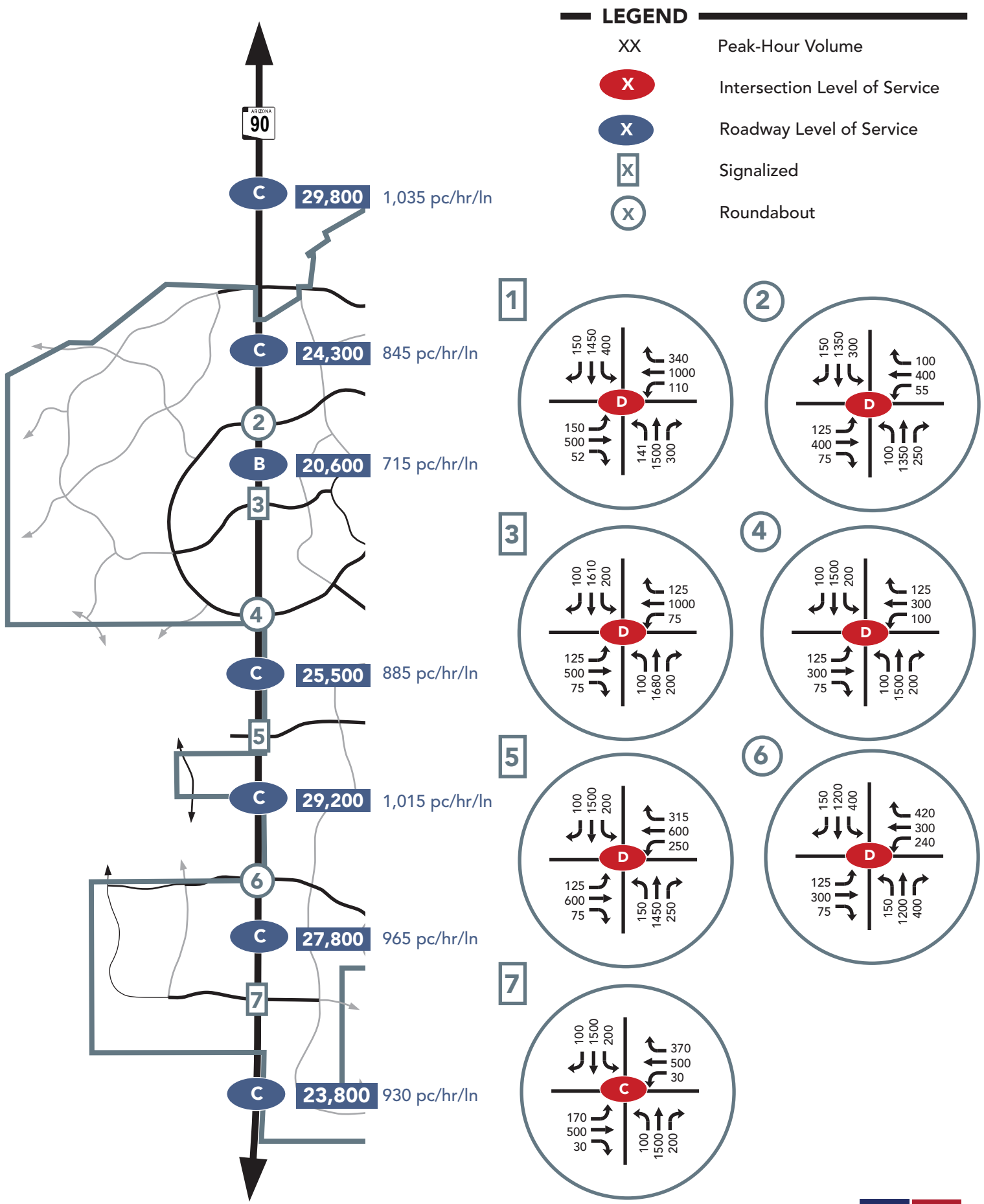


Figure 11. 2035 Forecasted Volumes and Planning Levels of Service

9.0 ACCESS MANAGEMENT PLAN

Access management is a set of techniques used to proactively manage and regulate the design, spacing, and operation of intersections, driveways, and median openings along a roadway. Roadways with more access points and intersections have more opportunities for conflicts, and significant friction to through traffic, which contributes to congestion and crashes. The objective of access management is to provide access to enhance the flow of traffic on a corridor or roadway system by improving safety, capacity, and speed.

Effective access management strategies control the number of driveways, decrease the number of crashes, reduce travel time and traffic congestion, preserve the flow of traffic, and improve access to properties. Access management includes several techniques that are designed to increase the capacity of roads, manage congestion, and reduce crashes, including:

- Increasing the distance between traffic signals and interchanges to improve traffic flow and reduce congestion
- Increasing driveway spacing to reduce the number of vehicular conflict points
- Developing safe turning lanes to reduce conflicts at intersections
- Using service and frontage roads
- Constructing medians, which regulate access
- Preserving ROW for future widening and to maintain good driver sight distance

It is important to implement these controls without overly restricting reasonable access to property. Controlling access improves mobility and is linked to the function of a particular roadway. Figure 12 illustrates that the amount of appropriate access is related to the level of mobility and the specific function of a road, such as:

- Low volume and low speed facilities (such as local roads) serve to provide direct and frequent access to properties.
- Higher volumes and higher speed facilities (such as freeways) serve to provide mobility and restrict direct access to adjacent land uses.

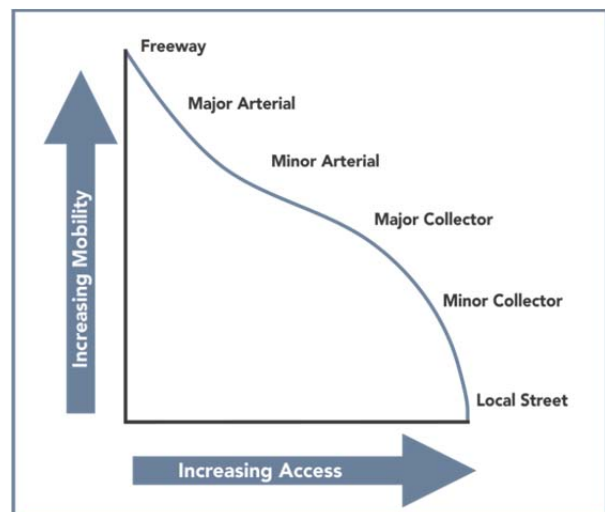


Figure 12. Roadway Functional Classification

The challenge of managing access is establishing a program of legal, administrative, and technical strategies with the appropriate balance between private property access rights and the need to control access to serve public need. Ideally, these strategies will be implemented through planning practices, rules, engineering standards, and procedures resulting in access

decisions that successfully, fairly, and consistently determine access management for each unique situation.

Roadways utilizing access management techniques are likely to be safer, provide better circulation, and improve travel times. The frequency of intersections greatly influences the capacity and function of roadways. Roadways with more access points and intersections have more opportunities for conflicts, and significant friction to through-traffic, which contributes to congestion and crashes. Examples of access management techniques include:

- Increasing driveway spacing
- Utilizing turning lanes
- Grade-separating intersections
- Installing medians

Applying access management techniques can also enhance the livability of a community, improve pedestrian/bicycle safety, enhance customer safety and convenience to businesses, provide additional areas for streetscaping, and promote efficient land and site design. The potential economic benefits of access management include reserving the market area for businesses, improving customer safety and convenience, providing more efficient freight movement, and raising property values. Communities that have implemented access management have more area for landscaping, while preserving community/scenic character and promoting more efficient land and site design. Additionally, access management can reduce emissions and fuel consumption due to improved traffic progression, and can help avoid substandard access to lot splits caused by excessive driveways.

9.1 Access Management within Vigneto

The City of Benson has Access Management Plan guidelines within their Small Area Transportation Study dated September 2007. These guidelines present methods to control access. Where applicable, the Vigneto Development should be designed using the planning tools available including the suggestive access management plan #1.

9.2 Access Management on SR90

Access to SR90 is regulated by ADOT. All of the proposed full access points onto SR90 from the Vigneto Development are located at existing median breaks. Therefore, no new median breaks are requested for the proposed Villages at Vigneto. All improvements on SR 90 will require a permit with ADOT. Per ADOT, permits will not be allowed without a City of Benson IGA/MOU on the level of development possible per intersection improvement.

All turn lanes constructed on SR 90 must meet the approval of the ADOT Regional Traffic Engineer and District Engineer regardless of the minimum standards.

When land uses are more clearly defined and traffic impact analysis reports are prepared to address development impacts, right in/right out accesses will be requested. At that time, the ADOT Regional Traffic Engineer and District Engineer will approve requested access locations.

10.0 CONCLUSIONS

The Villages at Vigneto is a rural area where only SR 90 exists today. However, over the next 20 years, Vigneto will be an active community with single family residential, age targeted residential, commercial, office and school land uses. Once Vigneto is built out, the proposed development will contain approximately 28,000 dwelling units on 12,250 acres of land. A town center concept will be located in the development on approximately 115 acres.

The Villages at Vigneto is a unique planned community in that, an extensive path system will be constructed between residential and commercial land uses to promote alternative modes of transportation and an active lifestyle. LSVs, electric vehicles, bicycles and pedestrians will be encouraged to use the path system. However, the LSVs will not be allowed on SR 90.

The Villages at Vigneto is anticipated to generate approximately 40,000 external trips on an average weekday when the development is complete and occupied. The development is anticipated to take 20 years to complete.

It is anticipated that all internal roadways within the Vigneto development will provide acceptable levels of service as either four-lane or two-lane roadways. The functional classifications shown on Figure 3 illustrates the proposed lane widths along with the corresponding cross sections.

It is anticipated that SR 90 will operate at an acceptable roadway level of service LOS C or better as a state highway with controlled access. Full median breaks should be limited to those shown herein. Right in/right out access should be provided on SR 90 at approved site access locations and balanced to provide optimal access to development along SR 90 but maintain efficient flows through the corridor. Preliminary intersection analyses show that dual left turn lanes may be required on SR 90 at the signalized intersections. All improvements on SR 90 will require a permit with ADOT. Per ADOT, permits will not be allowed without a City of Benson IGA/MOU on the level of development possible per intersection improvement.

Driveway spacing and access control are important considerations in the early stages of development for Vigneto. Direct access onto the arterial roadways should be limited. Sight distance is critical on all roadways especially when the multi-use lanes intersect with the roadways.

As development occurs, traffic impact studies will be required to recommend the ultimate roadway and intersection geometry for Vigneto. Specific development plans will guide the transportation system into its final form. This preliminary document presents planning level intersection and roadway needs. As such, this document is intended solely for the purpose of defining the basic framework of the transportation requirements for The Villages at Vigneto. This analysis will need to be updated periodically to reflect refinements and changes to the development in the future.

APPENDIX A

United Civil Group

2803 N. 7th Avenue
Phoenix, AZ 85007

Street : SR90
Location : S. of Post Road

7/7/2015
Tuesday

24 Hour Classification

NB

Interval Start	Total	Bike	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi
13:00	314	0	212	60	5	22	0	1	14	0	0	0	0	0
14:00	300	1	203	62	6	14	0	0	14	0	0	0	0	0
15:00	344	0	220	76	6	25	0	0	16	1	0	0	0	0
16:00	442	1	296	90	8	31	1	0	14	1	0	0	0	0
17:00	383	2	289	56	6	13	0	0	17	0	0	0	0	0
18:00	200	1	147	26	3	15	0	0	8	0	0	0	0	0
19:00	133	1	89	18	3	6	0	0	13	0	0	3	0	0
20:00	87	2	64	13	1	3	0	0	2	0	0	2	0	0
21:00	76	0	57	9	2	1	0	0	4	0	0	3	0	0
22:00	47	0	37	5	0	1	0	0	3	0	0	1	0	0
23:00	42	0	34	6	0	1	0	0	1	0	0	0	0	0
7/8/2015														
00:00	10	0	5	1	1	2	0	0	1	0	0	0	0	0
01:00	20	0	13	2	0	1	0	0	3	0	0	1	0	0
02:00	15	0	9	4	0	0	0	0	2	0	0	0	0	0
03:00	27	0	17	6	1	1	0	0	2	0	0	0	0	0
04:00	66	0	47	15	0	4	0	0	0	0	0	0	0	0
05:00	117	0	82	23	0	6	0	0	6	0	0	0	0	0
06:00	194	2	138	31	2	12	1	0	8	0	0	0	0	0
07:00	236	3	176	39	2	9	0	0	7	0	0	0	0	0
08:00	310	1	212	63	3	18	0	0	11	0	0	2	0	0
09:00	307	1	208	55	2	27	0	0	14	0	0	0	0	0
10:00	311	1	207	58	4	20	1	0	19	0	0	1	0	0
11:00	310	1	212	58	4	10	0	0	25	0	0	0	0	0
12:00	290	1	189	61	5	20	0	0	12	0	0	2	0	0
Total	4581	18	3163	837	64	262	3	1	216	2	0	15	0	0
%		0.4	69.0	18.3	1.4	5.7	0.1	0.0	4.7	0.0	0.0	0.3	0.0	0.0

United Civil Group

2803 N. 7th Avenue
Phoenix, AZ 85007

Street : SR90
Location : S. of Post Road

7/7/2015
Tuesday

24 Hour Speed

mph	NB														Avg.
	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200	
13:00	314	0	1	0	0	0	0	0	0	1	11	48	145	108	68.7
14:00	300	0	0	0	0	0	0	0	0	3	7	59	104	127	69.3
15:00	344	0	0	0	0	0	0	0	0	0	5	66	137	136	69.4
16:00	442	0	0	0	0	0	0	0	0	0	7	58	190	187	69.8
17:00	383	0	0	0	0	0	0	0	0	0	5	56	172	150	69.8
18:00	200	0	0	0	0	0	0	0	2	0	3	29	78	88	70.0
19:00	133	0	0	0	0	0	0	0	1	1	2	19	48	62	69.9
20:00	87	0	0	0	0	0	0	1	0	0	0	19	37	30	68.9
21:00	76	0	0	0	0	0	0	0	0	0	0	21	31	24	68.8
22:00	47	0	0	0	0	0	0	0	0	0	1	11	19	16	68.7
23:00	42	0	0	0	0	0	0	0	0	0	3	9	12	18	68.2
7/8/2015															
00:00	10	0	0	0	0	0	0	0	0	0	1	4	3	2	66.8
01:00	20	0	0	0	0	0	0	1	0	0	1	5	8	5	66.1
02:00	15	0	0	0	0	0	0	0	1	0	0	4	8	2	65.9
03:00	27	0	0	0	0	0	0	0	0	1	0	5	5	16	71.5
04:00	66	0	0	0	0	0	0	0	1	0	0	9	25	31	69.7
05:00	117	0	0	0	0	0	0	0	0	1	2	17	49	48	69.2
06:00	194	0	0	0	0	0	0	0	0	0	0	29	78	87	70.3
07:00	236	0	0	0	0	0	0	0	0	0	2	37	98	99	69.8
08:00	310	0	0	0	0	0	0	0	0	0	5	55	116	134	69.7
09:00	307	0	0	0	0	0	0	0	1	1	6	55	118	126	69.1
10:00	311	0	0	0	0	0	1	0	0	1	5	56	130	118	69.2
11:00	310	0	0	0	0	0	0	1	0	0	5	64	135	105	69.0
12:00	290	0	0	0	0	0	0	0	0	5	8	52	118	107	68.7
Total	4581	0	1	0	0	0	1	3	6	14	79	787	1864	1826	69.4
%		0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	1.7	17.2	40.7	39.9	

Average (Mean) 69.4 mph **Minimum** 20.0 mph **Maximum** 87.6 mph **Pace Range** 64.8 - 74.8 mph 3599 vehicles (78.6 %)

Percentile Speeds
(mph) 10% 15% 50% 85% 90%
63.4 64.8 69.3 74.5 76.4

Speeds Exceeded
25 mph 35 mph 45 mph 55 mph 65 mph 75 mph
100.0 % (4580) 100.0 % (4580) 99.9 % (4576) 99.5 % (4556) 80.6 % (3690) 10.6 % (484)

United Civil Group

2803 N. 7th Avenue
Phoenix, AZ 85007

Street : SR90
Location : S. of Post Road

7/7/2015
Tuesday

24 Hour Volume, per Channel

Interval Start			Interval Start			NB		
Interval Start			Interval Start			Interval Start		
13:00	79	314	01:00	4	20	24 Hour Total 4581 <u>00:00 - 12:00</u> 12 Hour Count 1923 Peak Hour 08:45 Peak Volume 320 Factor 0.88 <u>12:00 - 00:00</u> 12 Hour Count 2658 Peak Hour 16:00 Peak Volume 442 Factor 0.96		
13:15	72		01:15	7				
13:30	76		01:30	5				
13:45	87		01:45	4				
14:00	83	300	02:00	2	15			
14:15	59		02:15	4				
14:30	84		02:30	2				
14:45	74		02:45	7				
15:00	74	344	03:00	5	27			
15:15	77		03:15	9				
15:30	96		03:30	6				
15:45	97		03:45	7				
16:00	115	442	04:00	10	66			
16:15	105		04:15	15				
16:30	107		04:30	19				
16:45	115		04:45	22				
17:00	100	383	05:00	30	117			
17:15	81		05:15	28				
17:30	124		05:30	16				
17:45	78		05:45	43				
18:00	64	200	06:00	38	194			
18:15	50		06:15	48				
18:30	42		06:30	49				
18:45	44		06:45	59				
19:00	39	133	07:00	55	236			
19:15	30		07:15	54				
19:30	29		07:30	63				
19:45	35		07:45	64				
20:00	19	87	08:00	79	310			
20:15	22		08:15	73				
20:30	20		08:30	77				
20:45	26		08:45	81				
21:00	13	76	09:00	81	307			
21:15	25		09:15	67				
21:30	17		09:30	91				
21:45	21		09:45	68				
22:00	8	47	10:00	89	311			
22:15	14		10:15	72				
22:30	15		10:30	74				
22:45	10		10:45	76				
23:00	19	42	11:00	96	310			
23:15	8		11:15	56				
23:30	12		11:30	69				
23:45	3		11:45	89				
7/8/2015 00:00	2	10	12:00	66	290			
00:15	3		12:15	74				
00:30	4		12:30	71				
00:45	1		12:45	79				

United Civil Group

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7/7/2015
Tuesday

24 Hour Classification

SB

Interval Start	Total	Bike	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi
14:00	66	0	48	8	1	2	0	0	7	0	0	0	0	0
15:00	280	2	215	34	0	14	0	0	15	0	0	0	0	0
16:00	481	0	369	79	2	16	0	0	15	0	0	0	0	0
17:00	301	2	230	54	1	9	0	0	5	0	0	0	0	0
18:00	224	0	188	29	2	3	0	0	2	0	0	0	0	0
19:00	154	1	124	20	0	5	0	0	4	0	0	0	0	0
20:00	134	0	107	18	0	2	0	0	6	1	0	0	0	0
21:00	116	1	90	16	1	4	0	0	4	0	0	0	0	0
22:00	87	0	72	10	0	3	0	0	2	0	0	0	0	0
23:00	98	0	75	18	1	2	0	0	2	0	0	0	0	0
7/8/2015														
00:00	40	0	33	6	0	1	0	0	0	0	0	0	0	0
01:00	20	0	12	6	0	0	0	0	1	1	0	0	0	0
02:00	26	0	19	1	0	0	0	0	6	0	0	0	0	0
03:00	35	0	22	5	1	1	0	0	2	1	0	3	0	0
04:00	46	0	27	8	0	7	0	0	1	1	0	2	0	0
05:00	164	1	97	35	2	17	0	0	9	1	0	2	0	0
06:00	285	1	189	60	4	13	0	0	13	1	0	4	0	0
07:00	355	3	230	68	7	20	0	0	26	1	0	0	0	0
08:00	304	0	193	67	7	15	0	0	19	2	0	1	0	0
09:00	259	0	165	56	6	14	0	0	18	0	0	0	0	0
10:00	242	0	153	55	3	19	0	0	11	1	0	0	0	0
11:00	254	1	173	48	2	16	0	0	9	2	0	3	0	0
12:00	263	0	180	54	2	12	1	0	13	0	0	1	0	0
13:00	306	2	224	44	4	16	0	0	15	1	0	0	0	0
Total	4540	14	3235	799	46	211	1	0	205	13	0	16	0	0
%		0.3	71.3	17.6	1.0	4.6	0.0	0.0	4.5	0.3	0.0	0.4	0.0	0.0

United Civil Group

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Street : SR90
Location : S. of Post Road

7/7/2015
Tuesday

24 Hour Speed

mph	SB														Avg.	
	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200		
14:00	66	0	0	0	0	0	0	0	1	1	3	27	26	8	65.7	
15:00	280	0	0	0	0	0	0	0	1	6	5	93	99	76	67.4	
16:00	481	0	0	0	0	0	0	2	0	2	24	143	197	113	67.1	
17:00	301	0	0	0	0	1	2	0	0	0	16	98	127	57	66.6	
18:00	224	0	0	0	0	0	0	0	0	1	11	88	78	46	66.8	
19:00	154	0	0	0	0	0	0	0	0	2	6	53	63	30	66.7	
20:00	134	0	0	0	0	0	1	0	0	3	11	51	56	12	64.9	
21:00	116	0	0	0	0	0	0	1	0	2	10	46	42	15	65.1	
22:00	87	0	0	0	0	0	0	0	0	2	5	38	32	10	65.2	
23:00	98	0	0	0	0	0	0	0	0	1	8	40	33	16	65.9	
7/8/2015																
00:00	40	0	0	0	0	0	0	0	0	0	4	19	14	3	65.0	
01:00	20	0	0	0	0	0	0	1	0	2	2	8	3	4	63.0	
02:00	26	0	0	0	0	0	0	0	1	0	3	11	9	2	64.5	
03:00	35	0	0	0	0	0	0	1	0	2	4	6	17	5	64.7	
04:00	46	0	0	0	0	0	0	0	1	1	3	13	24	4	65.2	
05:00	164	0	0	0	0	0	0	0	1	4	7	47	60	45	67.4	
06:00	285	0	0	0	0	0	0	1	1	3	9	72	124	75	67.5	
07:00	355	1	0	0	0	0	0	0	1	1	19	101	128	104	67.4	
08:00	304	0	0	1	0	0	1	0	2	2	24	101	111	62	66.1	
09:00	259	0	0	0	0	0	1	0	0	2	25	101	93	37	65.5	
10:00	242	0	0	0	1	0	2	1	2	2	19	100	81	34	65.1	
11:00	254	0	0	0	0	0	0	1	3	8	23	88	88	43	65.5	
12:00	263	0	0	0	0	0	1	1	1	0	20	119	88	33	65.3	
13:00	306	0	0	0	0	0	0	0	1	3	24	124	101	53	66.1	
Total	4540	1	0	1	1	1	8	9	16	50	285	1587	1694	887	66.3	
%		0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.4	1.1	6.3	35.0	37.3	19.5		
Average (Mean)		66.3 mph			Minimum 14.1 mph			Maximum 87.6 mph			Pace Range 62.1 - 72.1 mph			3420 vehicles (75.3 %)		
Percentile Speeds		<u>10%</u>	<u>15%</u>	<u>50%</u>	<u>85%</u>	<u>90%</u>										
(mph)		60.8	62.1	66.2	70.9	72.7										
Speeds Exceeded		<u>25 mph</u>	<u>35 mph</u>	<u>45 mph</u>	<u>55 mph</u>	<u>65 mph</u>	<u>75 mph</u>									
		100.0 % (4538)	99.9 % (4536)	99.5 % (4519)	98.1 % (4453)	56.9 % (2581)	4.1 % (187)									

United Civil Group

2803 N. 7th Avenue
Phoenix, AZ 85007

Street : SR90
Location : S. of Post Road

7/7/2015
Tuesday

24 Hour Volume, per Channel

SB			SB			24 Hour Total
Interval Start			Interval Start			
14:00	20	66	02:00	6	26	24 Hour Total 4540 <u>00:00 - 12:00</u> 12 Hour Count 2030 Peak Hour 06:45 Peak Volume 380 Factor 0.95 <u>12:00 - 00:00</u> 12 Hour Count 2510 Peak Hour 15:45 Peak Volume 488 Factor 0.71
14:15	18		02:15	9		
14:30	15		02:30	4		
14:45	13		02:45	7		
15:00	18	280	03:00	11	35	
15:15	69		03:15	8		
15:30	91		03:30	7		
15:45	102		03:45	9		
16:00	96	481	04:00	3	46	
16:15	173		04:15	10		
16:30	117		04:30	9		
16:45	95		04:45	24		
17:00	68	301	05:00	24	164	
17:15	81		05:15	47		
17:30	80		05:30	44		
17:45	72		05:45	49		
18:00	77	224	06:00	41	285	
18:15	50		06:15	68		
18:30	49		06:30	76		
18:45	48		06:45	100		
19:00	52	154	07:00	98	355	
19:15	40		07:15	96		
19:30	26		07:30	86		
19:45	36		07:45	75		
20:00	36	134	08:00	85	304	
20:15	34		08:15	77		
20:30	38		08:30	80		
20:45	26		08:45	62		
21:00	30	116	09:00	63	259	
21:15	29		09:15	76		
21:30	27		09:30	62		
21:45	30		09:45	58		
22:00	17	87	10:00	58	242	
22:15	31		10:15	57		
22:30	18		10:30	60		
22:45	21		10:45	67		
23:00	26	98	11:00	60	254	
23:15	39		11:15	61		
23:30	16		11:30	54		
23:45	17		11:45	79		
7/8/2015 00:00	10	40	12:00	61	263	
00:15	14		12:15	68		
00:30	8		12:30	57		
00:45	8		12:45	77		
01:00	9	20	13:00	83	306	
01:15	2		13:15	87		
01:30	5		13:30	79		
01:45	4		13:45	57		

APPENDIX B

Lanes, Volumes, Timings

1:

8/31/2015

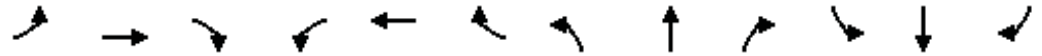


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	500	52	110	1000	340	141	1500	300	400	1450	150
Future Volume (vph)	150	500	52	110	1000	340	141	1500	300	400	1450	150
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		200	300		300	300		300	300		300
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.154			0.351			0.950			0.950		
Satd. Flow (perm)	287	3539	1583	654	3539	1583	3433	3539	1583	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			127			270			80			73
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		983			927			1992			721	
Travel Time (s)		22.3			21.1			30.2			10.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	150	500	52	110	1000	340	141	1500	300	400	1450	150
Shared Lane Traffic (%)												
Lane Group Flow (vph)	150	500	52	110	1000	340	141	1500	300	400	1450	150
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6

Lanes, Volumes, Timings

1:

8/31/2015

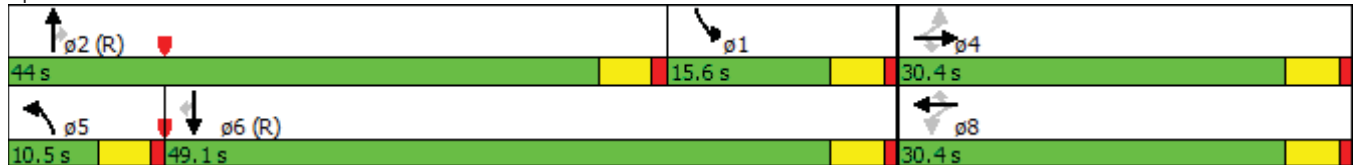


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	30.4	30.4	30.4	30.4	30.4	30.4	10.5	44.0	44.0	15.6	49.1	49.1
Total Split (%)	33.8%	33.8%	33.8%	33.8%	33.8%	33.8%	11.7%	48.9%	48.9%	17.3%	54.6%	54.6%
Maximum Green (s)	25.9	25.9	25.9	25.9	25.9	25.9	6.0	39.5	39.5	11.1	44.6	44.6
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag							Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0		0	0		0	0
Act Effect Green (s)	25.9	25.9	25.9	25.9	25.9	25.9	6.0	39.5	39.5	11.1	44.6	44.6
Actuated g/C Ratio	0.29	0.29	0.29	0.29	0.29	0.29	0.07	0.44	0.44	0.12	0.50	0.50
v/c Ratio	1.83	0.49	0.10	0.59	0.98	0.53	0.62	0.97	0.41	0.95	0.83	0.18
Control Delay	441.4	28.6	0.3	42.2	57.3	9.7	53.4	41.7	14.3	72.8	24.5	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	441.4	28.6	0.3	42.2	57.3	9.7	53.4	41.7	14.3	72.8	24.5	7.3
LOS	F	C	A	D	E	A	D	D	B	E	C	A
Approach Delay		114.7			45.0			38.3			32.9	
Approach LOS		F			D			D			C	

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.83
 Intersection Signal Delay: 46.9
 Intersection LOS: D
 Intersection Capacity Utilization 103.8%
 ICU Level of Service G
 Analysis Period (min) 15

Splits and Phases: 1:



Lanes, Volumes, Timings

2:

8/31/2015



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	400	75	55	400	100	100	1350	250	300	1350	150
Future Volume (vph)	125	400	75	55	400	100	100	1350	250	300	1350	150
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Storage Length (ft)	200		200	200		200	300		300	300		300
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1863	3725	1667	1863	3725	1667	1863	3725	1667	1863	3725	1667
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1863	3725	1667	1863	3725	1667	1863	3725	1667	1863	3725	1667
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1010			830			4555			1992	
Travel Time (s)		23.0			18.9			69.0			30.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	125	400	75	55	400	100	100	1350	250	300	1350	150
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	400	75	55	400	100	100	1350	250	300	1350	150
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Turning Speed (mph)	30		30	30		30	30		30	30		30
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type: Other

Control Type: Roundabout

Intersection Capacity Utilization 81.7% ICU Level of Service D

Analysis Period (min) 15

Lanes, Volumes, Timings

3:

8/31/2015

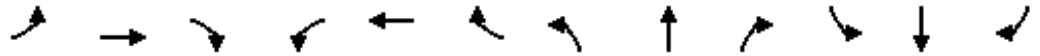


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	500	75	75	1000	125	100	1680	200	200	1610	100
Future Volume (vph)	125	500	75	75	1000	125	100	1680	200	200	1610	100
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		200	200		200	300		300	300		300
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850				0.850			0.850		0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.219			0.335			0.091			0.084		
Satd. Flow (perm)	408	3539	1583	624	3539	1583	329	3539	1583	304	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			36			31			71			22
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		926			804			3470			4555	
Travel Time (s)		21.0			18.3			52.6			69.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	125	500	75	75	1000	125	100	1680	200	200	1610	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	500	75	75	1000	125	100	1680	200	200	1610	100
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6

Lanes, Volumes, Timings

3:

8/31/2015



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.8	22.8	22.8	22.8	22.8	22.8	52.2	52.2	52.2	52.2	52.2	52.2
Total Split (%)	30.4%	30.4%	30.4%	30.4%	30.4%	30.4%	69.6%	69.6%	69.6%	69.6%	69.6%	69.6%
Maximum Green (s)	18.3	18.3	18.3	18.3	18.3	18.3	47.7	47.7	47.7	47.7	47.7	47.7
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effect Green (s)	18.3	18.3	18.3	18.3	18.3	18.3	47.7	47.7	47.7	47.7	47.7	47.7
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.64	0.64	0.64	0.64	0.64	0.64
v/c Ratio	1.26	0.58	0.18	0.49	1.16	0.31	0.48	0.75	0.19	1.04	0.72	0.10
Control Delay	207.5	28.1	15.0	37.2	113.1	19.9	16.7	12.1	4.1	95.5	11.4	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	207.5	28.1	15.0	37.2	113.1	19.9	16.7	12.1	4.1	95.5	11.4	4.5
LOS	F	C	B	D	F	B	B	B	A	F	B	A
Approach Delay		58.8			98.7			11.5			19.9	
Approach LOS		E			F			B			B	

Intersection Summary

Area Type: Other
 Cycle Length: 75
 Actuated Cycle Length: 75
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.26
 Intersection Signal Delay: 38.1
 Intersection LOS: D
 Intersection Capacity Utilization 101.7%
 ICU Level of Service G
 Analysis Period (min) 15

Splits and Phases: 3:



Lanes, Volumes, Timings

4:

8/31/2015



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	300	75	100	300	125	100	1500	200	200	1500	100
Future Volume (vph)	125	300	75	100	300	125	100	1500	200	200	1500	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		200	200		200	300		300	300		300
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1183			1177			3681			3470	
Travel Time (s)		26.9			26.8			55.8			52.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	125	300	75	100	300	125	100	1500	200	200	1500	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	300	75	100	300	125	100	1500	200	200	1500	100
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type: Other

Control Type: Roundabout

Intersection Capacity Utilization 81.1% ICU Level of Service D

Analysis Period (min) 15

Lanes, Volumes, Timings

5:

8/31/2015

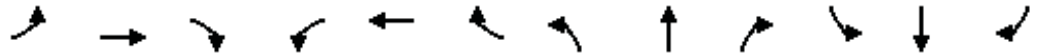


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	600	75	250	600	315	150	1450	250	200	1500	100
Future Volume (vph)	125	600	75	250	600	315	150	1450	250	200	1500	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		300	300		300	300		300	300		300
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.329			0.329			0.950			0.950		
Satd. Flow (perm)	613	3539	1583	613	3539	1583	3433	3539	1583	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			76			161			144			71
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1005			1115			4610			3681	
Travel Time (s)		22.8			25.3			69.8			55.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	125	600	75	250	600	315	150	1450	250	200	1500	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	600	75	250	600	315	150	1450	250	200	1500	100
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6

Lanes, Volumes, Timings

5:

8/31/2015

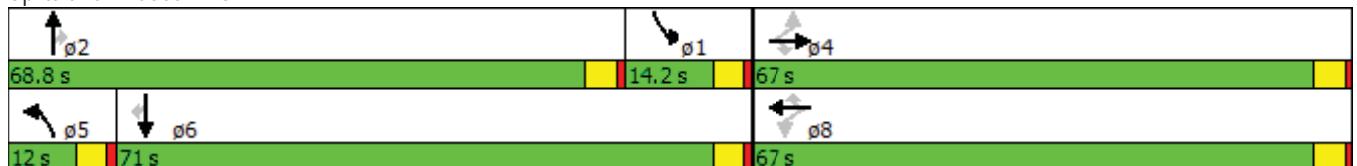


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	67.0	67.0	67.0	67.0	67.0	67.0	12.0	68.8	68.8	14.2	71.0	71.0
Total Split (%)	44.7%	44.7%	44.7%	44.7%	44.7%	44.7%	8.0%	45.9%	45.9%	9.5%	47.3%	47.3%
Maximum Green (s)	62.5	62.5	62.5	62.5	62.5	62.5	7.5	64.3	64.3	9.7	66.5	66.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag							Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0		0	0		0	0
Act Effect Green (s)	62.5	62.5	62.5	62.5	62.5	62.5	7.5	64.3	64.3	9.7	66.5	66.5
Actuated g/C Ratio	0.42	0.42	0.42	0.42	0.42	0.42	0.05	0.43	0.43	0.06	0.44	0.44
v/c Ratio	0.49	0.41	0.11	0.98	0.41	0.42	0.88	0.96	0.33	0.90	0.96	0.13
Control Delay	40.2	31.8	5.5	94.8	31.8	16.2	112.3	56.2	12.8	108.0	54.9	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.2	31.8	5.5	94.8	31.8	16.2	112.3	56.2	12.8	108.0	54.9	9.1
LOS	D	C	A	F	C	B	F	E	B	F	D	A
Approach Delay		30.6			41.1			54.9			58.2	
Approach LOS		C			D			D			E	

Intersection Summary

Area Type:	Other
Cycle Length:	150
Actuated Cycle Length:	150
Natural Cycle:	110
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.98
Intersection Signal Delay:	49.6
Intersection LOS:	D
Intersection Capacity Utilization:	91.2%
ICU Level of Service:	F
Analysis Period (min):	15

























Splits and Phases: 5:



Lanes, Volumes, Timings

6:

8/31/2015

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	300	75	240	300	420	150	1200	400	400	1200	150
Future Volume (vph)	125	300	75	240	300	420	150	1200	400	400	1200	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		200	300		300	300		300	300		300
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	3433	3539	1583	3433	3539	1583
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1032			1028			3905			4610	
Travel Time (s)		23.5			23.4			59.2			69.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	125	300	75	240	300	420	150	1200	400	400	1200	150
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	300	75	240	300	420	150	1200	400	400	1200	150
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	79.5%
ICU Level of Service	D
Analysis Period (min)	15

Lanes, Volumes, Timings

7:

8/31/2015

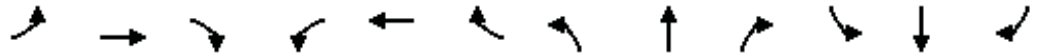


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	500	30	30	500	370	100	1500	200	200	1500	100
Future Volume (vph)	170	500	30	30	500	370	100	1500	200	200	1500	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		200	200		200	300		300	300		300
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850				0.850			0.850		0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.353			0.353			0.950			0.950		
Satd. Flow (perm)	658	3539	1583	658	3539	1583	3433	3539	1583	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			153			177			87			100
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		419			1077			560			3905	
Travel Time (s)		9.5			24.5			8.5			59.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	170	500	30	30	500	370	100	1500	200	200	1500	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	170	500	30	30	500	370	100	1500	200	200	1500	100
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6

Lanes, Volumes, Timings

7:

8/31/2015

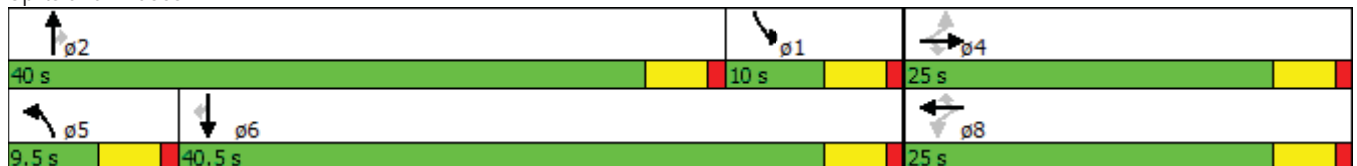


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	25.0	25.0	25.0	25.0	25.0	25.0	9.5	40.0	40.0	10.0	40.5	40.5
Total Split (%)	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	12.7%	53.3%	53.3%	13.3%	54.0%	54.0%
Maximum Green (s)	20.5	20.5	20.5	20.5	20.5	20.5	5.0	35.5	35.5	5.5	36.0	36.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag							Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0		0	0		0	0
Act Effect Green (s)	20.2	20.2	20.2	20.2	20.2	20.2	5.0	35.5	35.5	5.5	38.0	38.0
Actuated g/C Ratio	0.27	0.27	0.27	0.27	0.27	0.27	0.07	0.48	0.48	0.07	0.51	0.51
v/c Ratio	0.96	0.52	0.06	0.17	0.52	0.67	0.44	0.89	0.25	0.79	0.83	0.12
Control Delay	90.2	25.5	0.2	23.8	25.5	19.0	39.9	26.5	7.6	58.2	22.2	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	90.2	25.5	0.2	23.8	25.5	19.0	39.9	26.5	7.6	58.2	22.2	3.0
LOS	F	C	A	C	C	B	D	C	A	E	C	A
Approach Delay		40.1			22.8			25.1			25.1	
Approach LOS		D			C			C			C	

Intersection Summary

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	74.7
Natural Cycle:	75
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.96
Intersection Signal Delay:	26.7
Intersection LOS:	C
Intersection Capacity Utilization:	85.4%
ICU Level of Service:	E
Analysis Period (min):	15

Splits and Phases: 7:



APPENDIX C

ARIZONA DEPARTMENT OF TRANSPORTATION
Southcentral District
MD T120

REVIEW COMMENTS

SUBMITTAL:	1st Review Submittal	PROJECT NAME:	SR 90 Vigneto Master Transportation Plan
REVIEWED BY:	Scott Beck James Gomes Dee Crumbacher	STATE ROUTE & MILEPOST:	SR 90, Benson
DISCIPLINE/OFFICE:	Southern Regional Traffic Engineering	RECEIVED DATE:	10/06/2015
RETURN DATE:	November 12, 2015	DESIGNER/CONSULTANT	United Civil Group, Sara Simpson
ADOT PROJECT MANAGER:		Contact Number	

ACTION CODES: A= WILL COMPLY B= DESIGNER/CONSULTANT TO EVALUATE
 C= ADOT TO EVALUATE D= DISREGARD COMMENT

DESIGN REVIEW COMMENTS
(CONTINUED)
Tucson District

ITEM NO.	DWG, SHT, PAGE NO.	COMMENT	DISPOSITION		COMMENT
			INIT.	FINAL	
					General comment: The Master Transportation Plan is an overview, an overall guide that supplements the CMP. Traffic Impact Analyses will be prepared at each phase of development throughout the life of the project to clearly define traffic engineering recommendations for this development. The introduction and the conclusion of this plan will be modified to more clearly state this.
1	1	Paragraph 3: Please reference ADOT Traffic Engineering Guidelines and Processes (TGP), Section 240, Traffic Impact Analysis in the statement. This is the reference that will be required by ADOT. The acronym" TIS" could be confused with Traffic Impact Statement (Traffic Statement by ADOT definition) that could be interrupted as pointing to an abbreviated traffic analysis. Please use the term Traffic Impact Analysis in the report.	A		Agree, modified all references from TIS to TIA.

DESIGN REVIEW COMMENTS
(CONTINUED)
Tucson District

ITEM NO.	DWG, SHT, PAGE NO.	COMMENT	DISPOSITION		COMMENT
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2	3 and 4	Section 2.1 Intersection Level of Service (LOS), 4 th paragraph and Section 2.2 Roadway Level of Service (LOS), paragraph1: Refer to ADOT TGP, 240-13-a. “Where the roadways, intersections... shall be mitigated to level of service C . Mitigation to level of service D may be acceptable in urban areas with a population of 50,000 or more at the discretion of the ADOT Regional Traffic Engineer...” The report should clarify that mitigation improvements may be elevated to LOS C or better.	A		Included in report on page 3
		The report identifies “Three major phases...” over 20 years out but only evaluates for buildout. There should be an initial phase for the first 5 year or so. How does the internal capture vary in each phase?	B		The first phase of development is not yet available, so it would be impossible to evaluate an initial phase in the first 5 years. When it is planned, a TIA will be prepared that addresses the impacts of the first phase. The internal capture will definitely vary with each phase of development, but until specifics are defined on what the first phase is, it is impossible to define internal capture. This would be specified in the TIA for the first phase of development.

**DESIGN REVIEW COMMENTS
(CONTINUED)
Tucson District**

ITEM NO.	DWG, SHT, PAGE NO.	COMMENT	DISPOSITION		COMMENT
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	4	Table 2. Network Link Characteristics: Since the State network is involved, the Report should include transportation and access management strategies or studies by ADOT including the SR 90 Conceptual Right of Way and Roadway Plan. Access management along SR 90 needs to be a key approach to preserving the functional integrity of State Route 90. A major plan study such as The Master Transportation Plan for Vigneto is a major plan and should discuss access management considerations along the ADOT routes.	A		Added chapter 9. Access Management Plan
	5	Table 2: The values of the Highway Capacity Manual are approved by ADOT and appropriate for the ADOT highway system. How do the values from the Benson Small Area Transportation Study compare to the Highway Capacity Manual values for the ADOT highway system?	A		Modified report to add HCM methodologies for SR 90.
	5	Since the report is discussing the future LOS on SR 90, the report should indicate the existing LOS for SR 90 under current conditions.	D		The report does discuss the existing LOS for SR 90 under current conditions. See 4.3 Roadway Level of Service. Methodologies were modified per comment above.

**DESIGN REVIEW COMMENTS
(CONTINUED)
Tucson District**

ITEM NO.	DWG, SHT, PAGE NO.	COMMENT	DISPOSITION		COMMENT
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	7 & 8	<p>Figure 1 and Figure 2 need to define the existing roadways in relationship to the new or existing developments (Whetstone Rd/Cooperative Way; Post Road; etc.)</p> <p>The implications to Post Road need to be identified. Several references identify the project as not related to the Villages. The report shows that 25% vpd are diverting to Benson along Post Road. What is the impact if not provided? Is there a limitation on development prior to Post Road constriction? Will the vpd that divert onto Post Road utilize the Post Rd/SR 80 connection as proposed in the past?</p>	A		<p>Existing local roads are added to figure 1 to show development in relation to surrounding area.</p> <p>Added paragraph on Post Road realignment see section 7.5. Based on Benson SATS, Post will provide connectivity between SR90 and SR80. This allows local residents the ability to travel within their city and not have to use I-10. Post Road will be developed to the eastern property edge. At that time, others will need to connect to SR 80. El Dorado is facilitating discussions on this.</p> <p>The report shows 10% divert on Post Road, not 25%. Trip distribution modified in report on page 30.</p> <p>If Post Road is not constructed by 2035, then approximately 5500 vehicles would travel on SR 90 north to I-10 and down SR 80. Because this has been identified as a road of significance for the City of Benson, El Dorado and the City will work together to determine when the road is constructed.</p>

**DESIGN REVIEW COMMENTS
(CONTINUED)
Tucson District**

ITEM NO.	DWG, SHT, PAGE NO.	COMMENT	DISPOSITION		COMMENT
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	9	First paragraph: Should the sentence read "... is the only roadway which accesses the proposed development"?	A		Thanks!!
	10	Is the adjustment value of 1.054 or 5.4% reasonable? VC ratio of 26%. Are the calculations correct or should it be 31%?	D		Yes, the adjustment value is reasonable. This is the value provided by ADOT MPD for the southeastern Region (R2-7 south). Some are greater than one and some are less, depending when the count was collected. The methodologies were modified, for LOS per the comment above. Therefore the VC comment is disregarded and LOS was calculated per HCM.
	11	Section 5.1.1: See comment 2 above for ADOT expectations for LOS.	A		Modified report per 240-13a
	11	5.1.2: ADOT has prepared the SR 90 Corridor Plan for access management.	A		Will incorporate SR 90 plan into report.
	13 and 17	6.0 Roadway Guidelines: The report states that the guidelines in the chapter are for the interior roadways within the Vigneto. The lane widths in the table should not apply to the ADOT routes. There needs to be a qualifying statement that the table guidelines are not associated with SR 90.	A		Added: The values in Table 6 do not apply to SR 90 and are not associated with ADOT. See Chapter 9. Access Management Plan for details on the future configuration of SR 90.

**DESIGN REVIEW COMMENTS
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Tucson District**

ITEM NO.	DWG, SHT, PAGE NO.	COMMENT	DISPOSITION		COMMENT
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	Figure , Page 17	The Figure 7 is included in the chapter and provides preliminary layout for roundabouts on SR 90. Intersection types on SR 90 should all be signalized at this planning stage. Roundabouts can be evaluated during design. The roundabout designs can be evaluated when alternatives are studied at a later date when more detail is known. Previous agreements with other developers along SR 90 will need to be considered.	B/C		Developer would like to consider roundabouts on SR 90. Therefore, additional discussions may be required at this preliminary design stage.
	19	6.3.3 Exclusive turn Lanes: Last sentence in paragraph 1 discusses turn lanes on SR 90. The sentence is correct but seems to contradict the statements at beginning of the chapter 6 indicating that the chapter was intended to provide planning for the interior of Vigneto.	A		Moved sentence to new chapter on Access Management Plan for SR 90
	19 and 27	Figure 3 Functional Roadway Classification shows the Arterial roadway adjacent to SR 90 at four sections. Page 19 indicated that multi-modal paths are adjacent to the Arterial roadways connecting residential areas to activity centers. How will the multi-modal traffic (LSV) using the paths get across SR 90? How do the LSV vehicles impact ADOT? LSV vehicles may not be allowed to cross the State Highway as presented in the concept. The report needs to verify that LSV are or are not allowed to cross the highway.	A		LSV are not allowed on ADOT roadways. There were initial discussions with Bill Harmon and Jay Gomes about using the culverts to cross under SR 90. However, that would need to be discussed further and included in the TIA's when the land use is more defined in each phased development area. Included statement in report.

**DESIGN REVIEW COMMENTS
(CONTINUED)
Tucson District**

ITEM NO.	DWG, SHT, PAGE NO.	COMMENT	DISPOSITION		COMMENT
			INIT.	FINAL	
	21	<p>The TransCAD model has not been accepted by ADOT for forecasting traffic volumes on the ADOT system. More data and values would be needed for ADOT to verify that the model is suitable for the highway system.</p> <p>No data was provided by TAZ structure. Each TAZ should list the land uses.</p> <p>Internal capture is provided by trip type but the trip type percentages (per MAG) are not provided.</p>	A		<p>More information is provided from ADOT's focus model for the Sierra Vista Reigon on SR90 for year 2040. The Vigneto Transcadd model was used to assist estimate trips internal to the development. Because the Vigneto Transcadd model actually projected volumes slightly greater than the approved ADOT MPD/SVMPO model on SR 90 in front of the site, these numbers were used for analyses. In the future, UCG will work with ADOT MPD as land uses are more clearly defined for Vigneto to update the approved ADOT model.</p>
	24 and 25	<p>ITE Land Use rates: Single Use Family is 7000 dwellings; Senior Adult Housing of 21000 is 3 times higher than single family with a significantly lower ITE rate. The higher number of senior dwellings generates only 10,640 more trips than single family dwellings. Will there be restrictive land use measures (zoning, municipal agreements, home owner restrictions, etc) that solidifies the land use will remain as senior adult dwellings considering a much lower trip generation?</p>	B		<p>At this time, the developer is projecting 25% single family and 75% senior adult.</p>

**DESIGN REVIEW COMMENTS
(CONTINUED)
Tucson District**

ITEM NO.	DWG, SHT, PAGE NO.	COMMENT	DISPOSITION		COMMENT
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	26	The use of MAG Household survey is oriented toward local communities and may not be suitable for highway systems. Internal capture is provided by trip type but the trip type percentages (per MAG) are not provided.	A		The MAG Household survey was used for internal capture of the development, not for the highway. The MAG trip type percentages are provided in section 7.2.1
	27	Pass-by Trips: 10% reduction overall. While pass-by trips may not affect turning movements into the driveways or intersections of the site they will impact turning movements at the intersections on/off SR 90.	A		Pass by trip turning movements will be captured at the intersections when the TIAs are performed for specific planning groups.
	27	The background traffic increase of 1% is very low and only increases SR 90 traffic by 11,800 veh by 2035. This number seems understated. The available difference from the overall number of 30,600 vpd is 18,000 vpd. Figure 9 shows that 18,000 vpd are added trips on the north end with the assumption that 25% of the trips are diverting to Benson along Post Road. The 80% internal capture rate is extremely high.	B		Because Vigneto is a large master planned community, it will generate trips onto the state route, that would be included in a general percentage and therefore increase overestimate the trips. Because we are adding Vigneto, the 1% growth rate accounts for other development (not vigneto) in the area. Based on our research, we could not find other proposed developments. In addition, much of the land is State Land and will not generate trips. Therefore, the 1% PLUS Vigneto is reasonable. The internal capture is 60% not 80% due to LSV usage within the community and extensive path system.

**DESIGN REVIEW COMMENTS
(CONTINUED)
Tucson District**

ITEM NO.	DWG, SHT, PAGE NO.	COMMENT	DISPOSITION		COMMENT
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	27	Section 7.4: The distribution percentages in this section do not match figure 9. The trip distribution percentages total 40, 000 vpd. Excluding church, school, and other localized land uses, that assumes over 80% of the residential and retail/office trip totals (230,000 vpd) remain internal. This needs more justification.	A		Fixed percentages.
	28	Figure 9: Traffic assignments are shown in the figure but there is not a total volume graphic.	B		Figure 10 shows the total volumes for SR 90. Will prepare a total volume 2035 graphics when the land uses are more clearly defined.
	30	Section 8.1 does not have a table or corresponding graphic showing volume/capacity ratio calculations.	A		The densities for roadway LOS are shown on Figure 10 per the HCM Methodologies for Multilane Highways
	32	Figure 10 provides peak hour volumes. Residential volumes are highly directional in peak hours. The analysis should include estimates for both peaks or provide detail on assumptions.	C		This is a planning level figure for 2035 volumes. Therefore, the peaks were only provided for planning purposes. Detailed studies will be required that show directional details. This would be near impossible at this phase of the planning stage.
	30	Intersection types on SR 90 should all be signalized at this planning stage. Roundabouts can be evaluated during design. The roundabout designs can be evaluated when alternatives are studied at a later date when more detail is known. Previous agreements with other developers along SR 90 will need to be considered at that time.	B/C		Developer would like to consider roundabouts on SR 90. Therefore, additional discussions may be required at this preliminary design stage.

**DESIGN REVIEW COMMENTS
(CONTINUED)
Tucson District**

ITEM NO.	DWG, SHT, PAGE NO.	COMMENT	DISPOSITION		COMMENT
			INIT.	FINAL	
		The planning document needs to specify/clarify that all improvements on SR 90 will require a permit with ADOT. Permits will not be allowed without a City of Benson IGA/MOU with ADOT on the level of development possible per intersection improvement.	A		Added language in intro, conclusion and Chapter 9 Access Management Plan
	Appendix B	Synchro 9 Report: The input values for the baseline on the ADOT routes need to meet the accepted values indicated in the Highway Capacity Manual and/or the ADOT TGP. Per TGP 240: The PHF "shall not exceed 0.90". A 0.90 phf is the accepted value for more than 300 vph/lane..."	A		Will modify

DESIGN REVIEW COMMENTS
(CONTINUED)
City of Benson

ITEM NO.	DWG, SHT, PAGE NO.	COMMENT	DISPOSITION		COMMENT
			INIT.	FINAL	
7	45-47	See Appendix G comment #2 for concerns about proposed cross sections. Revise cross section exhibits as needed.	B/C		Will discuss
8	48	Discuss that accessible parking spacing are per City of Benson or Pima County requirements.	A		Added to CMP
9	48	Revise emergency access way bullet to indicate that 16' pavement is acceptable for residential areas, however, commercial areas need 20' of pavement per City of Benson Subdivision Regulations.	A		Added to CMP
10	48	Revise the paving thickness bullet to add that the thickness will be per a geotechnical engineer's recommendation.	A		Added to CMP
11	48	Verify if the minimum lot width at driveway access points, the number of cluster residential units on a common private driveway, and driveway spacing as listed meets City of Benson requirements.	B/C		Not possible at this time
12	49	More detail needs to be provided in Section 4.G, particularly concerning bicycle, pedestrian, transit, and parking areas. Further, bicycle and pedestrian network maps should be included in the plan.	A		Will include a multiuse path map in CMP
13	49	The MTP does not take into account any transit service, but transit is discussed in this section as if it is a certainty within the development. The two discussions should be consistent, even if transit trips are not considered in the MTP in order to provide conservative traffic estimates.	A		Not assuming transit service to Vigneto at this time.
14	59	Discuss the use of traffic signals as well as roundabouts for the arterial roadway intersections.	A		Discussed in the Master Transportation Plan
15	59-60	Per the City of Benson Subdivision Regulations, the City of Benson's policy is to follow MAG Standards and to supplement with Pima County Standards where there is no MAG guidance. However, based on discussion with the City Engineer, Pima County Subdivision Street Standards (PC SD SS_ can be used in conjunction with the Benson Subdivision Regulations since they are more applicable than MAG standards. Any deviation must be approved by the City Engineer. Please revise this section (and others, if applicable) accordingly.	B/C		Will discuss further
16	60-62	General Comment: the design standards table should clearly identify which standards are variations from the specified standards and which are in compliance with said standards. The tables are confusing as presented.	A		Modified in CMP

**DESIGN REVIEW COMMENTS
(CONTINUED)
City of Benson**

ITEM NO.	DWG, SHT, PAGE NO.	COMMENT	DISPOSITION		COMMENT
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17	60-62	Street Design Criteria needs to be consistent with the City of Benson Subdivision Regulations or Pima County Standards where there is no Benson guidance. Specific issues include (but are not limited to) the following	B/C		Will discuss further
17a	60-62	Number of lanes might change if projected volumes change	A		Will address if projected volumes change
17b	60-62	For collectors, why are lanes 16'-wide if a 7' multi-use path is included? The pavement width per the City of Benson Subdivision Regulations is 48'	A		Modified in CMP
17c	60-62	On arterial roadways, consider separating LSVs from pedestrians.	B/C		Will discuss
17d	60-62	A 4' sidewalk is too narrow for the Town Center local roadway, especially since it is likely that there will be a significant concentration of pedestrians in that area. Per the City of Benson Subdivision Regulations a 5'-wide sidewalk is required in commercial areas.	A		Modify to 5'
17e	60-62	Will medians be widened along arterials at signalized intersections to be able to provide a pedestrian refuge alongside the left-turn lane?	A		Will design intersections when land use is more clearly defined. Not at this planning stage.
17f	60-62	For collectors, will there be any need/use of two-way left-turn lanes?	A		Will evaluate when land use is more clearly defined and analysed
17g	60-62	Consider a range of posted speeds for arterial roadways (35-40 mph) taking into account the design speed of 40 mph (per the City of Benson Subdivision Regulations) and different roadway lengths.	A		Will modify
18	60-62	Consider removing all references to design standards which are dependent on design speed. It is assumed that such standards (i.e. length of transition, minimum radii, etc.) will be met during design stage based on the design speed and number of lanes which are selected at that time.	A		removed
19	G – 2	Paths are discussed for arterial roadways (16-foot separated path) and collectors (7-foot "path"), but what about residential streets?	D		Because they are low volume. Local roadways will be shared with vehicles and LSV

DESIGN REVIEW COMMENTS
(CONTINUED)
City of Benson

ITEM NO.	DWG, SHT, PAGE NO.	COMMENT	DISPOSITION		COMMENT
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20d i	G – 14	The “multi-use paths” shown are really multi-use lanes , and should be described as such. Paths typically refer to facilities which are off the roadway. This change should be made throughout the report and Master Plan.	A		Modified in Transportation Master Plan
20e i	G – 14	Justify the use of golf carts, bikes, and peds all in the same space. Consider providing an on-road shoulder for LSVs, or separate off-road paths for LSVs and bikes/pedestrians.			Low volume 16 foot path system will accommodate multimodal trips
21a	G – 15	Why would arterials be designed at 45 mph and posted at 35-40 mph? It might be best to allow for a range of speeds, 35 mph-40mph, potentially related to the length of the roadway.			Design speed is normally lower than the posted speed for safety concerns
21b	G – 15	Is a 25 mph speed limit feasible for the long collectors within the development? Again, a range of posted speeds (25-35 mph) might be best, potentially related to the length of the roadway.			Yes.
22	G – 16	How was intersection type (i.e. signalized) selected for intersections within the development? It seems like many of the internal roadways might be able to operate efficiently with stop control.			Roundabouts are preferred traffic control device internal to Vigneto. Warrants will be performed to determine which traffic control device and when it should be installed. At this time we are not recommending any specific device, just estimating where they might be placed in the future based on projected traffic volumes.
23	G – 19	Specifics about minimum driveway spacing on collectors and arterials needs to be included.	A		Will provide

DESIGN REVIEW COMMENTS
(CONTINUED)
City of Benson

ITEM NO.	DWG, SHT, PAGE NO.	COMMENT	DISPOSITION		COMMENT
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24a	G – 24	Why was LU 210 used instead of LU 270 (residential planned unit development)?			Trip rates are higher for 210 so we chose the more conservative rate. In addition 75% of the development is planned as adult living. There we did not believe this was the most appropriate for the entire community.
24b	G – 24	Why was specialty retail (LU 826) used instead of shopping center (LU 820)? Specialty retail generates more daily trips, but using the shopping center LU would be more conservative for both peak hours. Further, the equations should be used (instead of the average rates) to calculate trip generation where applicable.			Shopping center 820 is more conservative, the downtown area is planned as a mix of shops and such, more like the specialty retail area defined in the ITE Trip Gen Manual so we used it.
24c	G – 24	How was the daily trip generation for the resort calculated? The ITE manual has 8.92 daily trips per occupied room.			Daily trips were estimated using Hotel land use because daily trip tables are not provided for a resort.
25a	G – 25	How many resort rooms are planned, and how was the occupancy rate determined in order to calculate the trip generation?			Estimated 800 occupied rooms based on land size and discussions with developer. May change and will be reflected in TIA's specifically addressing the resort when the land uses are more clearly defined and the site laid out.

**DESIGN REVIEW COMMENTS
(CONTINUED)
City of Benson**

ITEM NO.	DWG, SHT, PAGE NO.	COMMENT	DISPOSITION		COMMENT
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25b	G – 25	The peak hour volumes for the senior adult housing are off by a factor of 1,000. Please verify that the correct volumes were entered in the model.	A		Correct volumes were entered in model. See comparison of ADOT/SVMPO approved model values to Vigneto model.
26a	G – 26	It would be helpful to have the MAG data listed here or included in the appendix. For example, do the percentages of trips used for this study match the MAG data exactly, or are they loosely based on the MAG numbers? Also, why was the MAG data used? Is it really comparable to this development?	A		MAG data was used as a guide. MAG data is provided in the report
26b	G – 26	Data collection at similar sites in Southern Arizona would be useful to determine expected internal trip capture for this project.	B/C		Will evaluate. Do you have any similar site recommendations?
26c	G – 26	A table showing the internal and external trips for each land use could be included to help show which land uses are generating the remaining external trips.			
26d	G – 26	The report hows an overall reduction in trips (from gross to next external) of 83%. Please provide examples of other Arizona locations which have achieved an overall 83% reduction from gross trips to net external trips to verify that this is feasible for the region.			This is a new development that will use LSV as the major transportation mode within the development. Examples from FL can be provided. AZ does not have a similar development for comparison.
27a	G – 27	The 60% trip reduction based on LSV use could potentially be high, despite the 80% reduction seen in Florida. The 60% should be verified with sites in Arizona.			This is the first proposed development of its kind. LSV will be the primary vehicle used internal to the development. See the Villages FL for an example of this type of use.

DESIGN REVIEW COMMENTS
(CONTINUED)
City of Benson

ITEM NO.	DWG, SHT, PAGE NO.	COMMENT	DISPOSITION		COMMENT
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27a i	G – 27	It is also unclear as to how the 60% reduction was applied. Please clarify this in the text (i.e. was it just applied to residential trips?).			Yes, the 60% reduction was only applied to residential trips
27b	G – 27	Is it safe to have LSVs, bikes, pedestrians, and other users all on the same path?			The paths are 16' wide. LSV and pedestrians will have plenty of room to maneuver in the multimodal system.
28	G – 27	Section 7.3, where did the 1% growth rate come from? ADOT uses the 1.5%-2% in the same area of SR90.			1.5 to 2 % is for all development. 1% is the background growth rate, solely. If a higher percentage is used, the estimates will be increased unproportioned to the growth that is actually occurring in the area. See ADOT's approved model for 2040 projected volumes on SR 90. .
29	G – 27	The external trip distribution does not seem appropriate, particularly to/from Tucson and Sierra Vista. There will likely be more than 35% of the external trips traveling to/from Tucson. Please consider revising or provide addition support for distribution.	B/C		Will review
30	G – 28	Figure 9 – These daily volumes do not seem high enough, even considering the 60% reduction based on LSV use.			See ADOT's approved model.

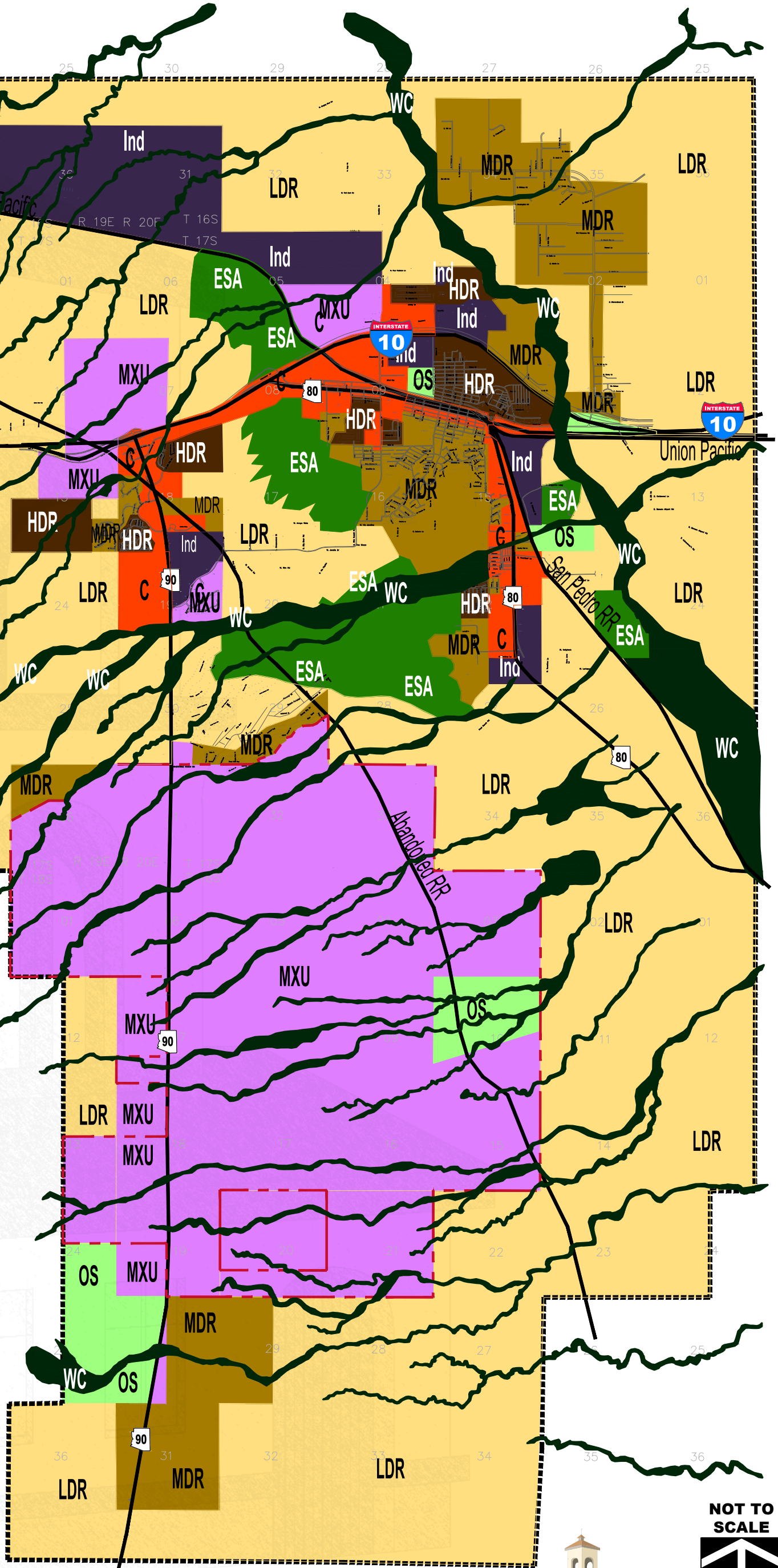
DESIGN REVIEW COMMENTS
(CONTINUED)
City of Benson

ITEM NO.	DWG, SHT, PAGE NO.	COMMENT	DISPOSITION		COMMENT
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31	G – 33	Will right-turn lanes be provided on SR90 at partial openings?			Right turn lane recommendations will be provided when the TIA's are completed and additional access points are known with specifics on the development to occur. When prepared, right turn analyses will be performed per the ADOT criteria.

CITY OF BENSON
GENERAL DEVELOPMENT PLAN
FUTURE LAND USE PLAN
2015

LEGEND

- LOW DENSITY RESIDENTIAL (0-3 RAC)
- MEDIUM DENSITY RESIDENTIAL (3-7 RAC)
- HIGH DENSITY RESIDENTIAL (>8 RAC)
- MIXED USE
- COMMERCIAL
- INDUSTRIAL PARK
- ENVIRONMENTALLY SENSITIVE AREA
- WILDLIFE CORRIDOR
- OPEN SPACE
- PLANNING AREA BOUNDARY
- CITY LIMITS
- PROJECT BOUNDARY



NOT TO SCALE



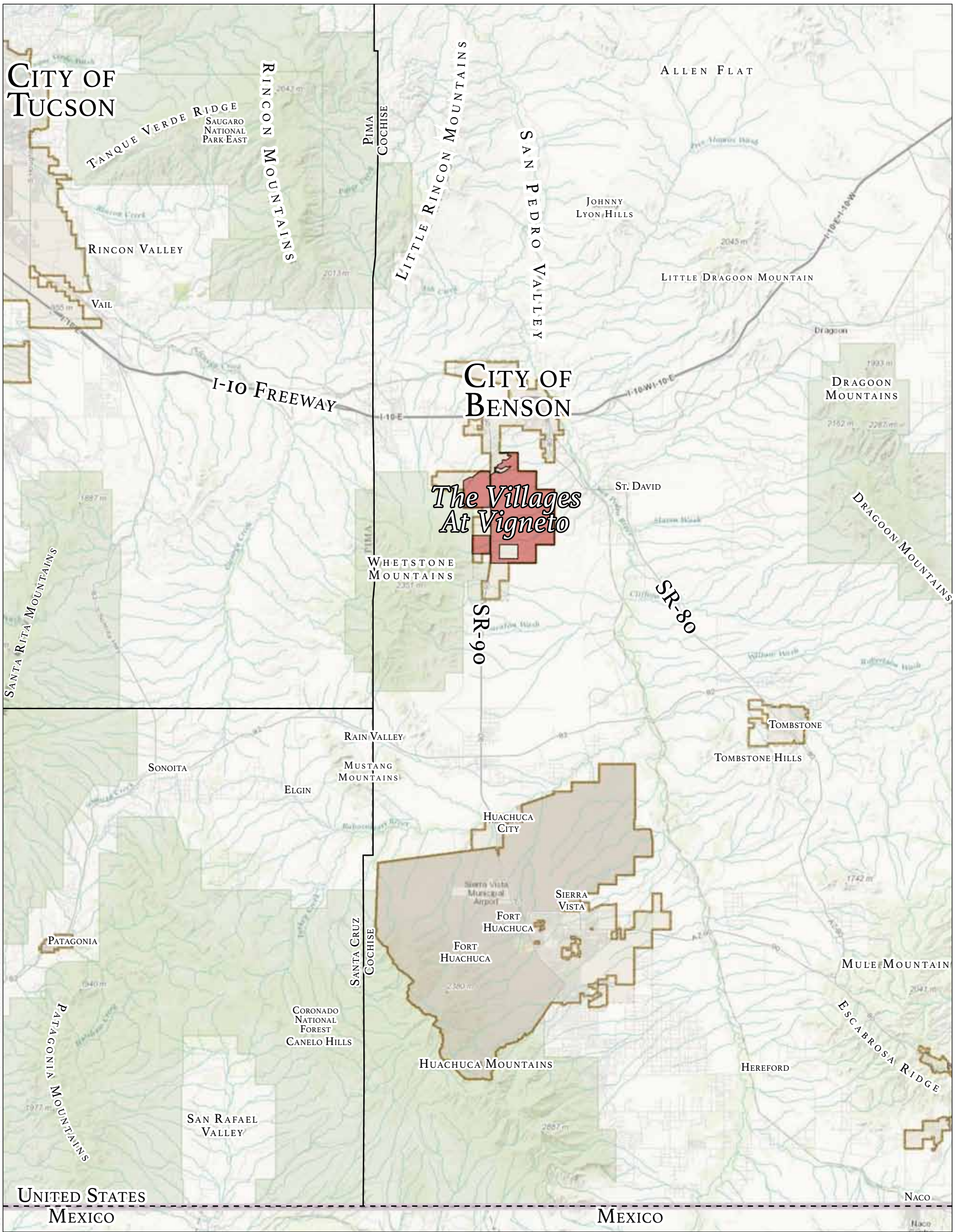
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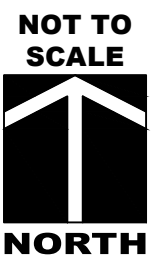
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The Villages at Vigneto
EXHIBIT 1: CITY OF BENSON GENERAL PLAN

September 8, 2015

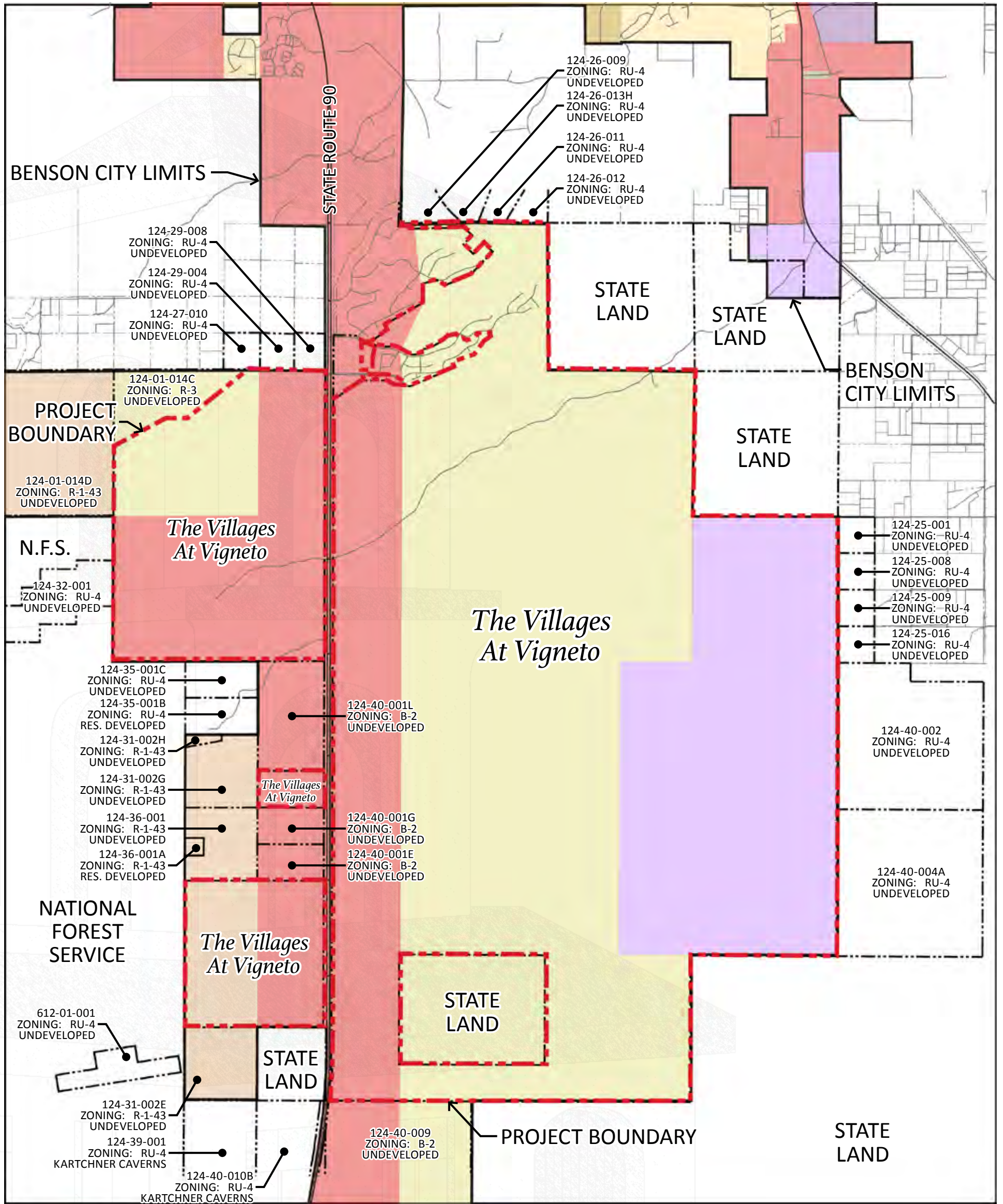


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The Villages at Vigneto
EXHIBIT 2: REGIONAL CONTEXT MAP
September 8, 2015



CITY OF BENSON ZONING DESIGNATIONS

- B-2 General Business
- I-2 Light Industrial
- R-1-43 Single Family Residential; 43,000 sq ft lot
- R-3 Single, Multi Family and Manufactured



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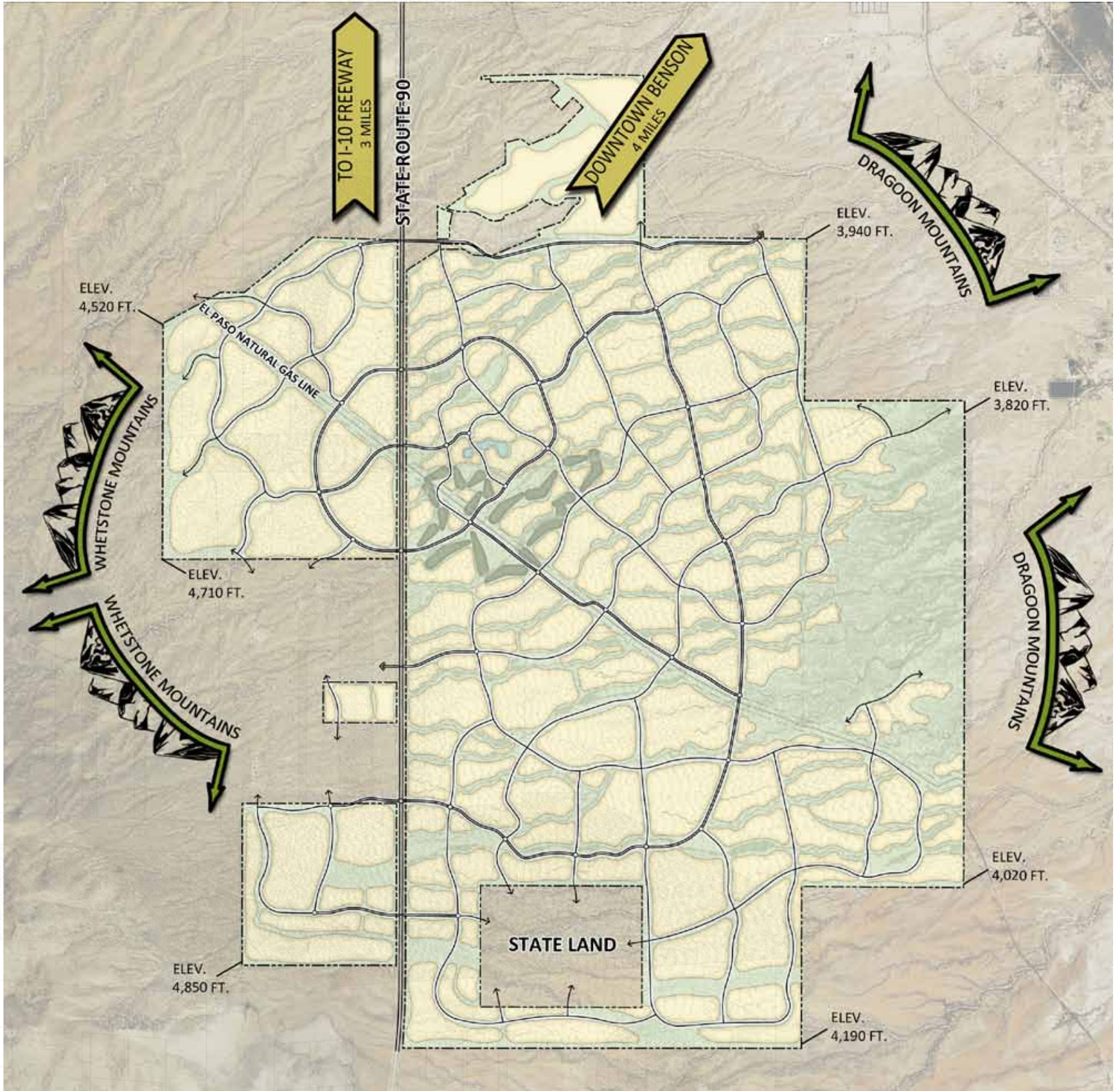


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The Villages at Vigneto

EXHIBIT 3: ADJACENT PROPERTY MAP

September 8, 2015



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The Villages at Vigneto

EXHIBIT 4: REGIONAL PHYSICAL SETTINGS MAP

September 8, 2015

THE VILLAGES AT VIGNETO
BOUNDARY



STATE ROUTE 90

U.S. ARMY CORPS. OF ENGINEERS
404 WASH BOUNDARY
PERMIT #2003-00826-SDM

EL PASO NATURAL GAS LINE

STATE LAND

LEGEND

-  Approved U.S. Army Corps. of Engineers 404 Wash Boundary
8,212 Acres - Up to 20,000 Units as Part of the Total 28,000 Units
-  Final CMP Boundary for The Villages at Vigneto
12,254 Acres - Maximum of 28,000 Total Units

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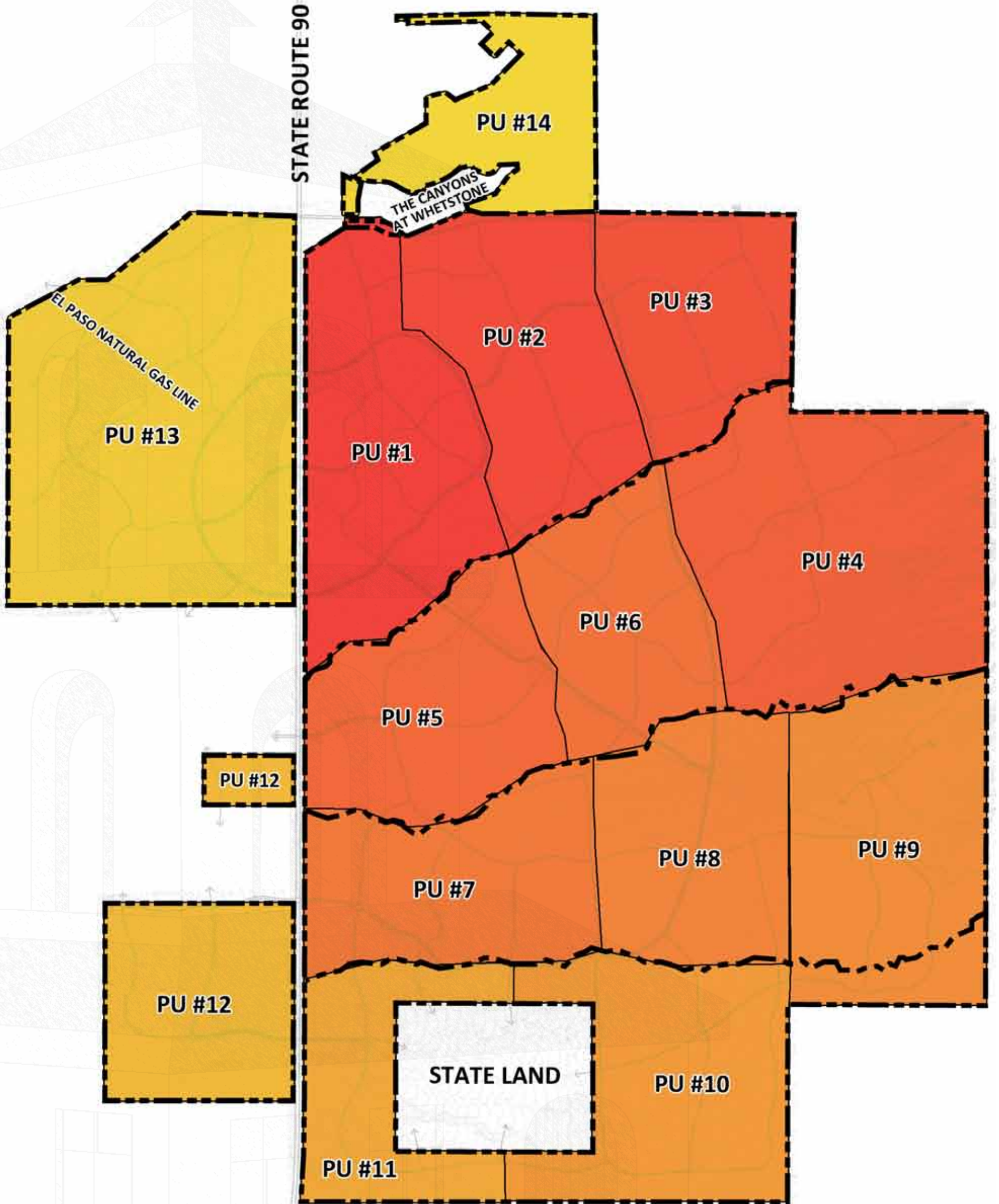


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EXHIBIT 5: EXISTING 404 PERMIT BOUNDARY

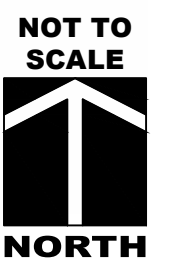
September 8, 2015



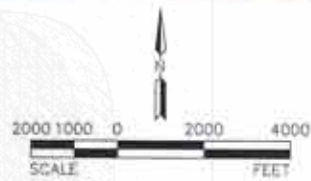
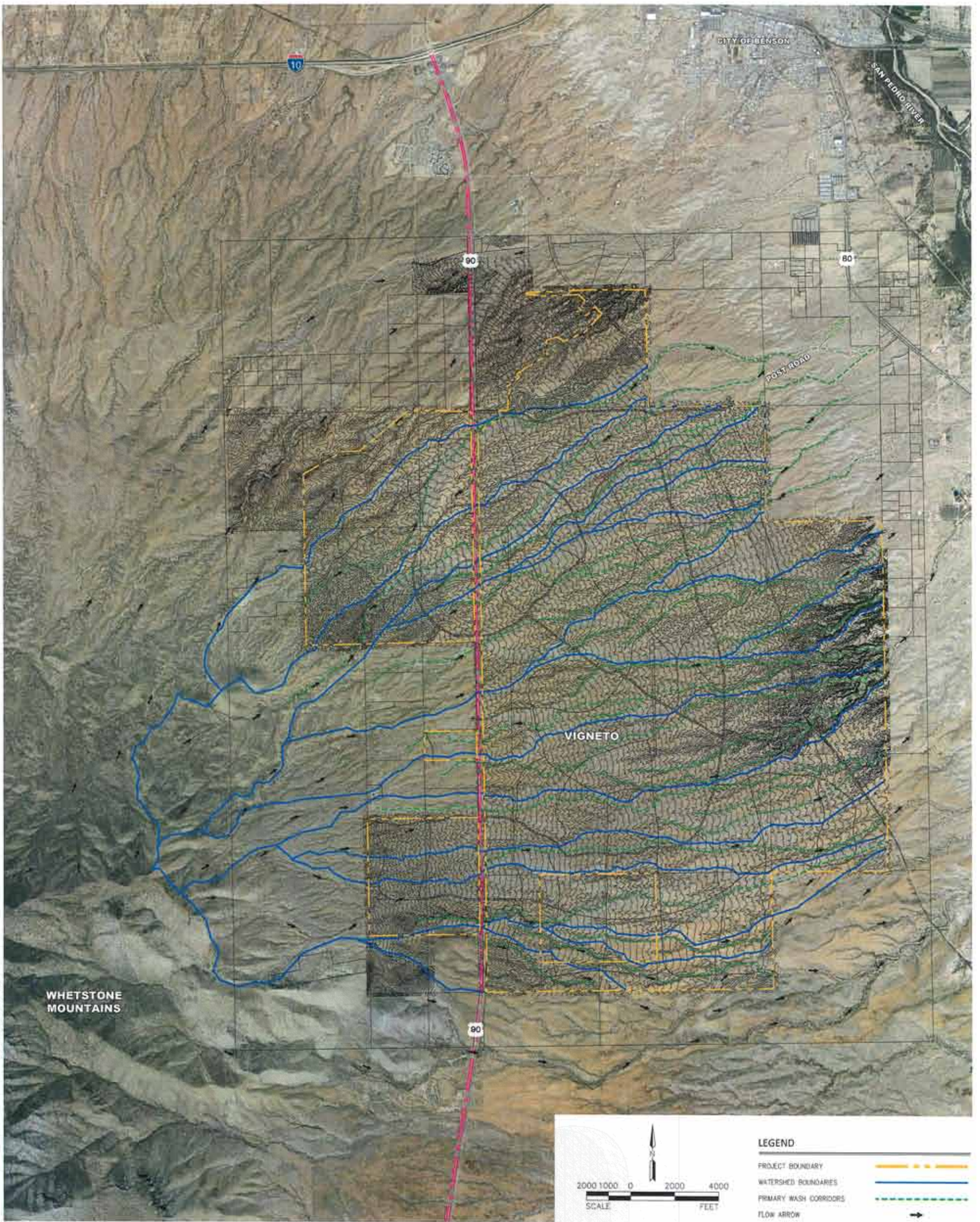
LEGEND

PU #1	PU #5	PU #9	PU #13
PU #2	PU #6	PU #10	PU #14
PU #3	PU #7	PU #11	
PU #4	PU #8	PU #12	

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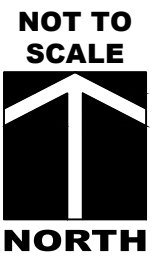
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LEGEND	
PROJECT BOUNDARY	
WATERSHED BOUNDARIES	
PRIMARY WASH CORRIDORS	
FLOW ARROW	



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EXHIBIT 7: CONCEPTUAL STORMWATER PLAN

September 8, 2015

STATE ROUTE 90

5.0 MG WASTEWATER TREATMENT PLANT

LEGEND

-  LIFT STATION
-  GRAVITY SEWER
-  GRAVITY FLOW THROUGH SEWER
-  FORCEMAIN
-  EXISTING GRAVITY SEWER
-  LIFT STATION OR ALTERNATIVE TREATMENT


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 Tucson • Phoenix • Flagstaff
 4001 E. Paradise Falls Drive
 Tucson, Arizona 85712 (520) 206-9585

NOT TO SCALE



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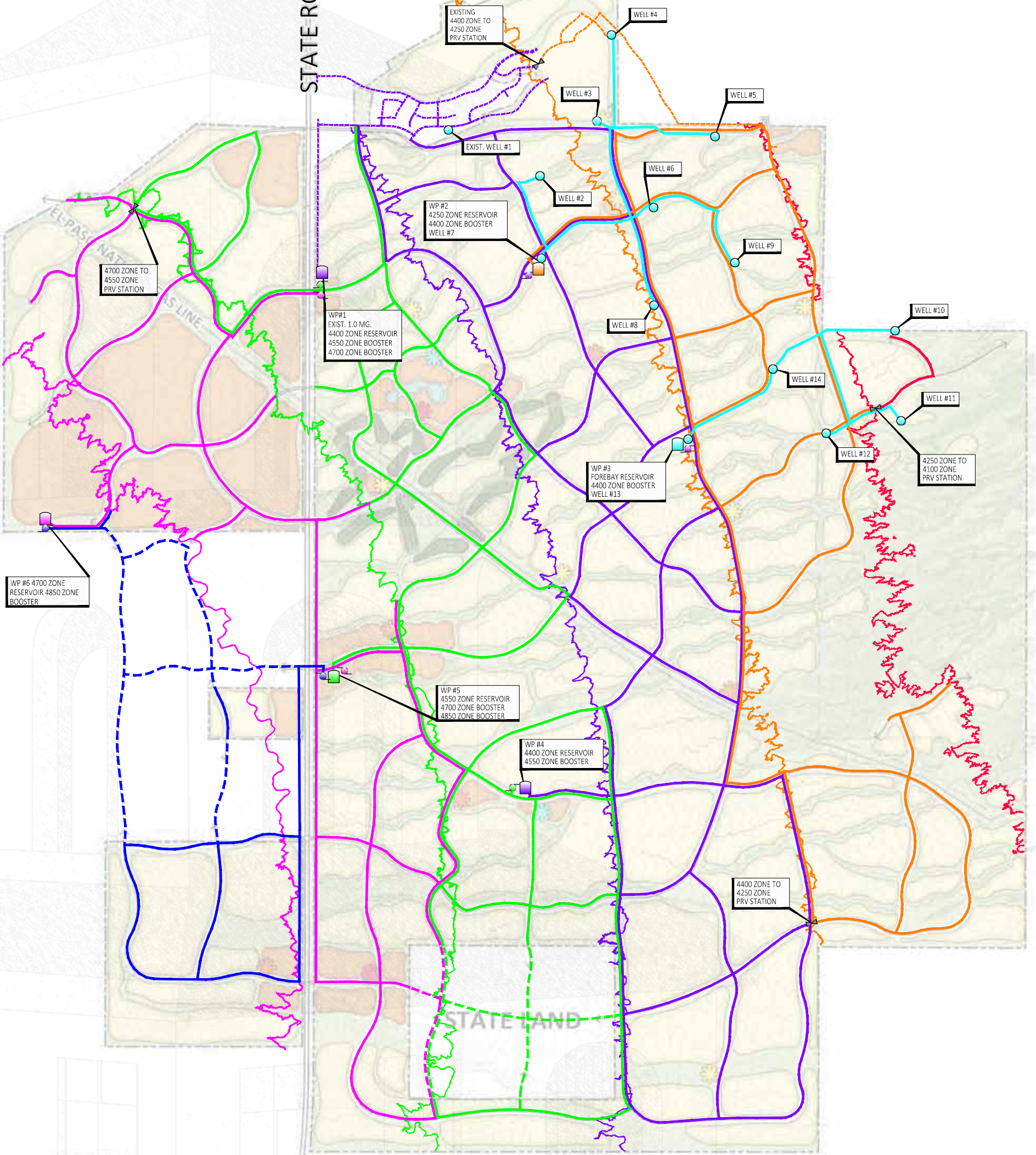


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EXHIBIT 9: CONCEPTUAL WASTEWATER PLAN

September 8, 2015

STATE ROUTE 90



LEGEND

- RESERVOIR
- WELL
- BOOSTER STATION
- PRESSURE REDUCING VALVE
- EXISTING WATER MAIN
- 4100 ZONE WATER MAIN
- 4250 ZONE WATER MAIN
- 4400 ZONE WATER MAIN
- 4550 ZONE WATER MAIN
- 4700 ZONE WATER MAIN
- 4850 ZONE WATER MAIN
- RAW WATER MAIN

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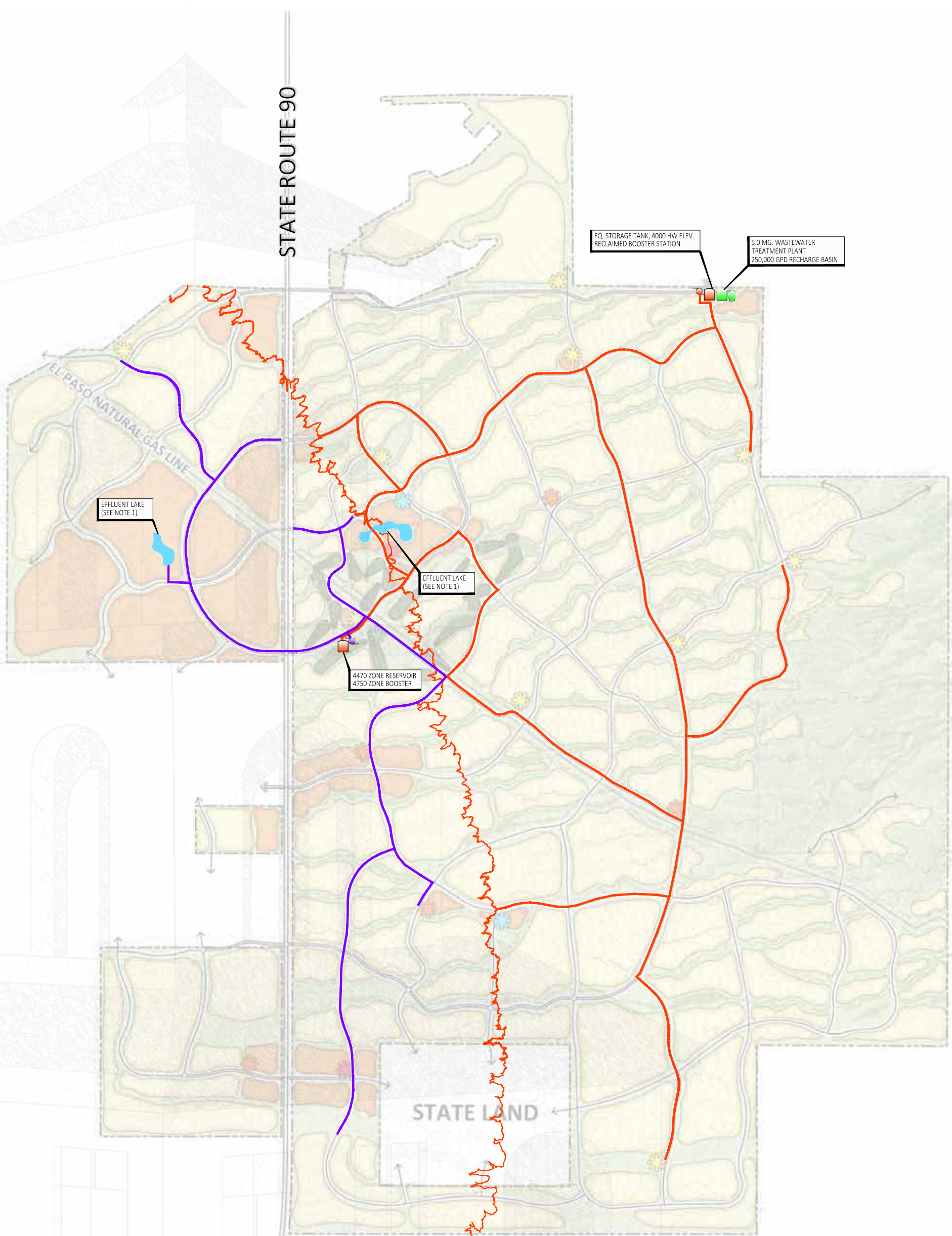


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EXHIBIT 8: CONCEPTUAL POTABLE WATER PLAN




September 8, 2015

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STATE ROUTE 90



LEGEND

-  4470 ZONE RECLAIMED WATER MAIN
-  4750 ZONE RECLAIMED WATER MAIN
-  PROPOSED EFFLUENT LAKE

NOTE 1:
EFFLUENT LAKES MAY BE LOCATED THROUGHOUT THE PROPERTY FOR DISTRIBUTION TO REUSE OR RECHARGE FACILITIES. ADDITIONAL OPTIONS FOR EFFLUENT RECHARGE OR DISCHARGE WILL BE PURSUED AS DEVELOPMENT PROGRESSES.


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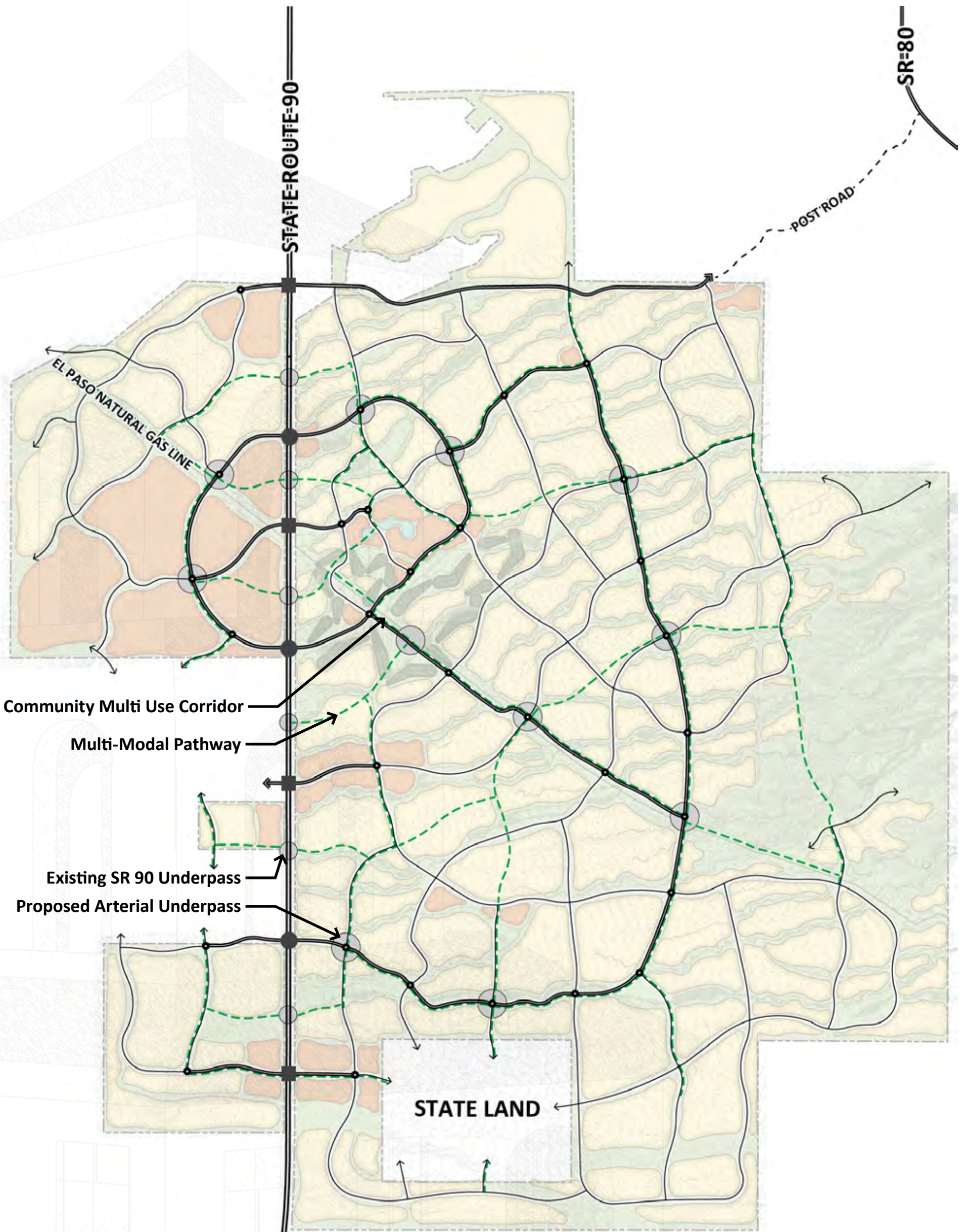
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EXHIBIT 10: CONCEPTUAL RECLAIMED WATER PLAN

September 8, 2015



Community Multi Use Corridor







Multi-Modal Pathway

Existing SR 90 Underpass

Proposed Arterial Underpass

STATE LAND

LEGEND

-  Project Arterial - Min. 4 Lane
-  Project Collector - Min. 2 Lane
-  Round-a-bout
-  Future Connection
-  Future State Route 90 Intersection - Signalized
-  Future State Route 90 Intersection - Round-a-bout

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 **El Dorado**
Benson LLC

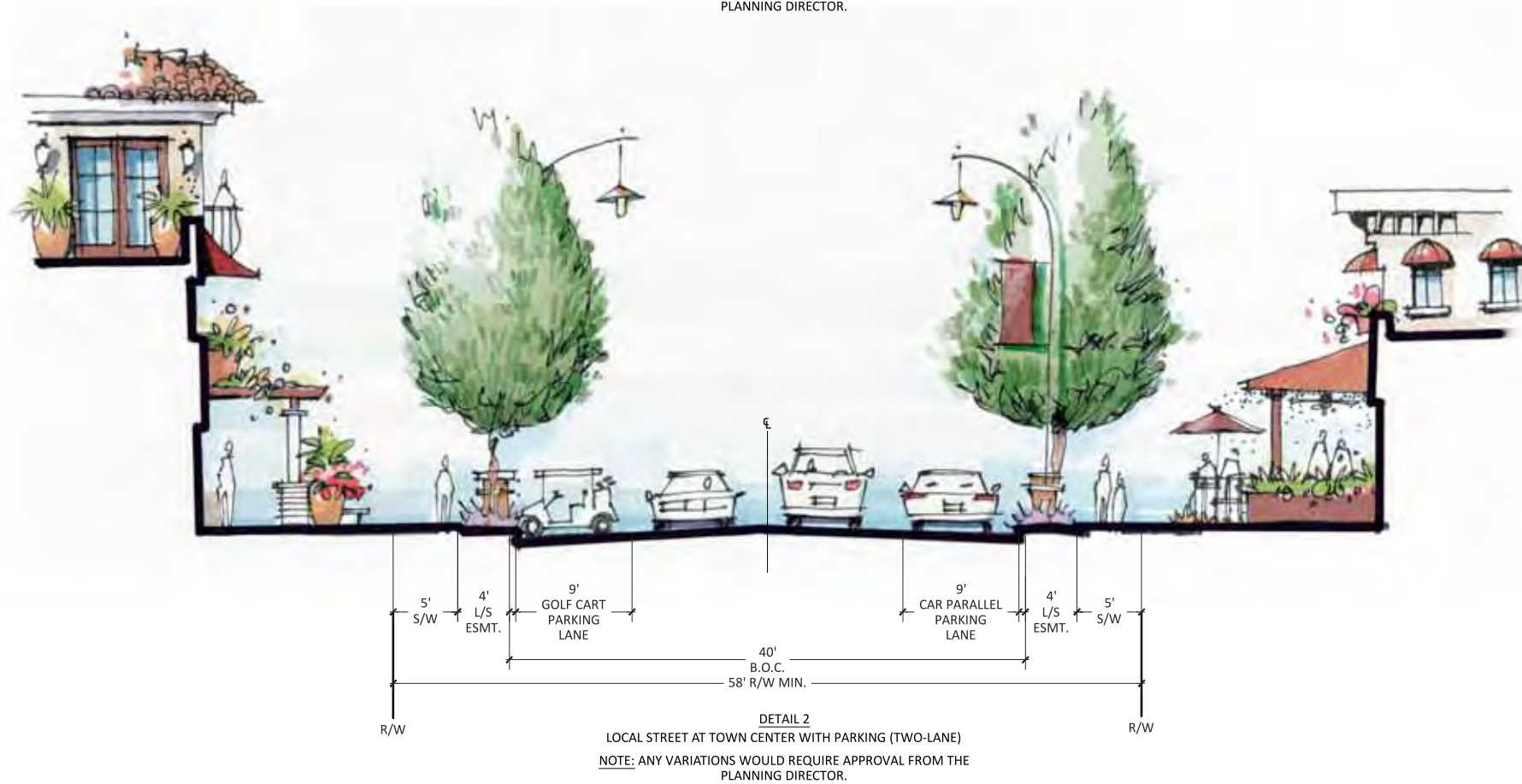
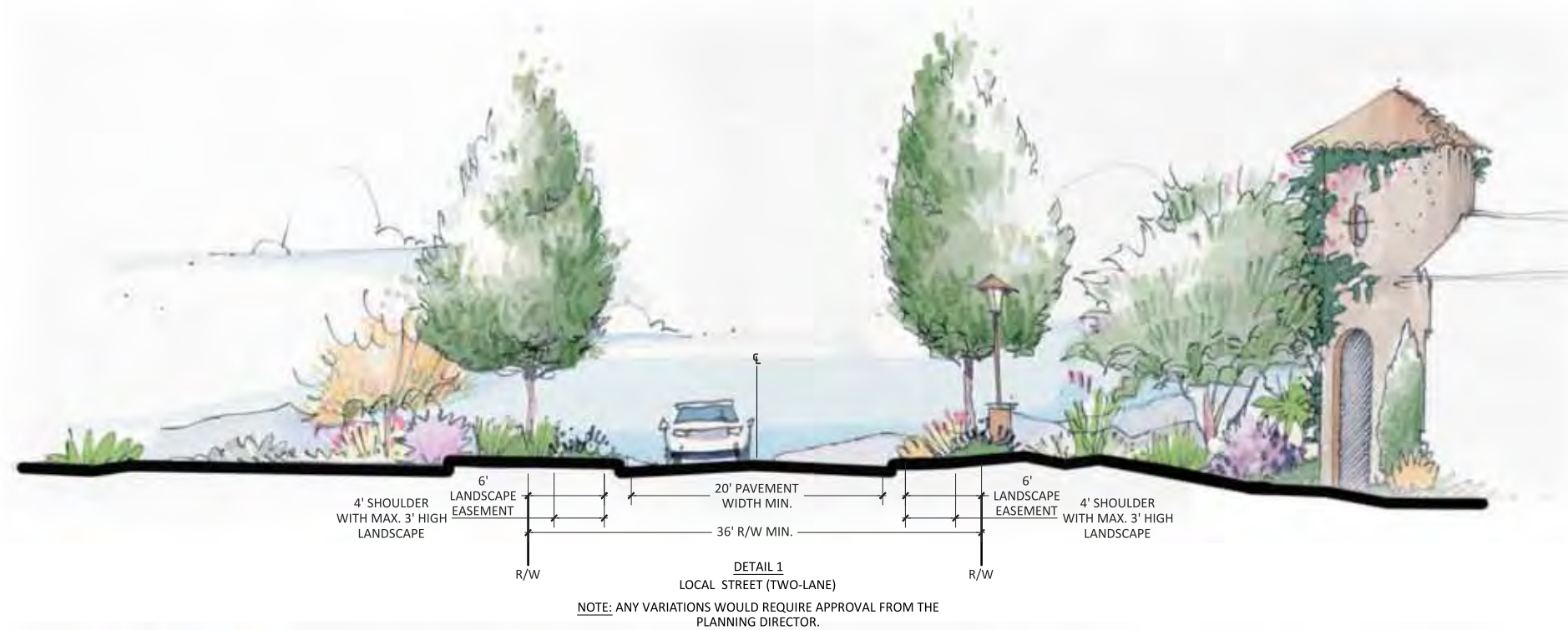
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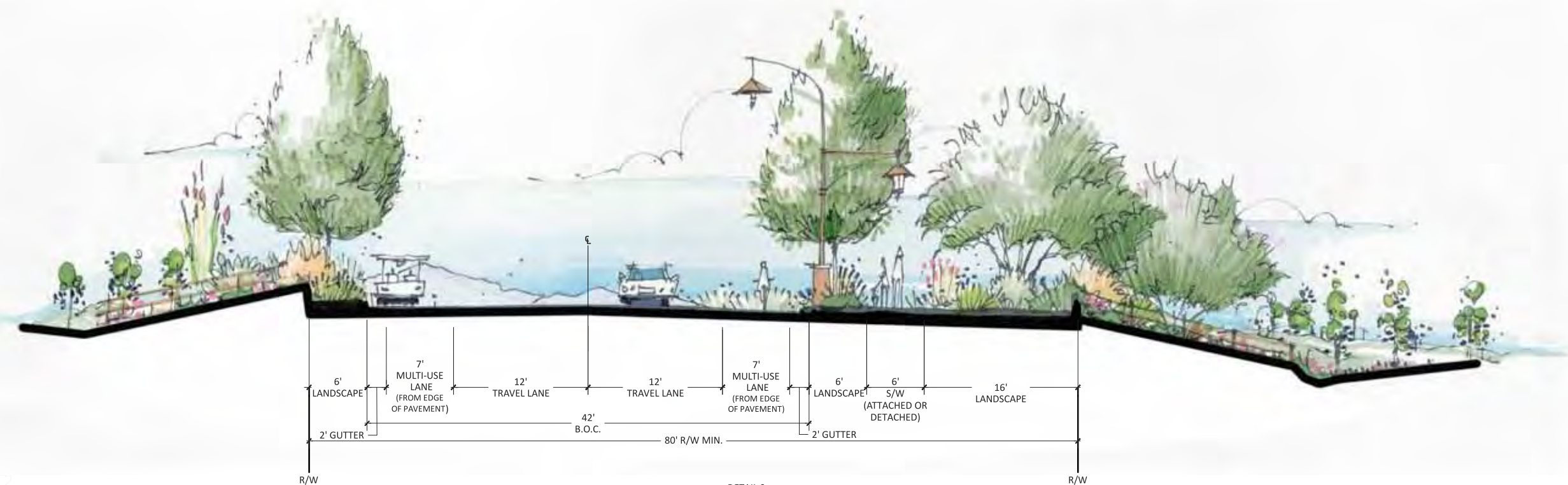


The Villages at Vigneto

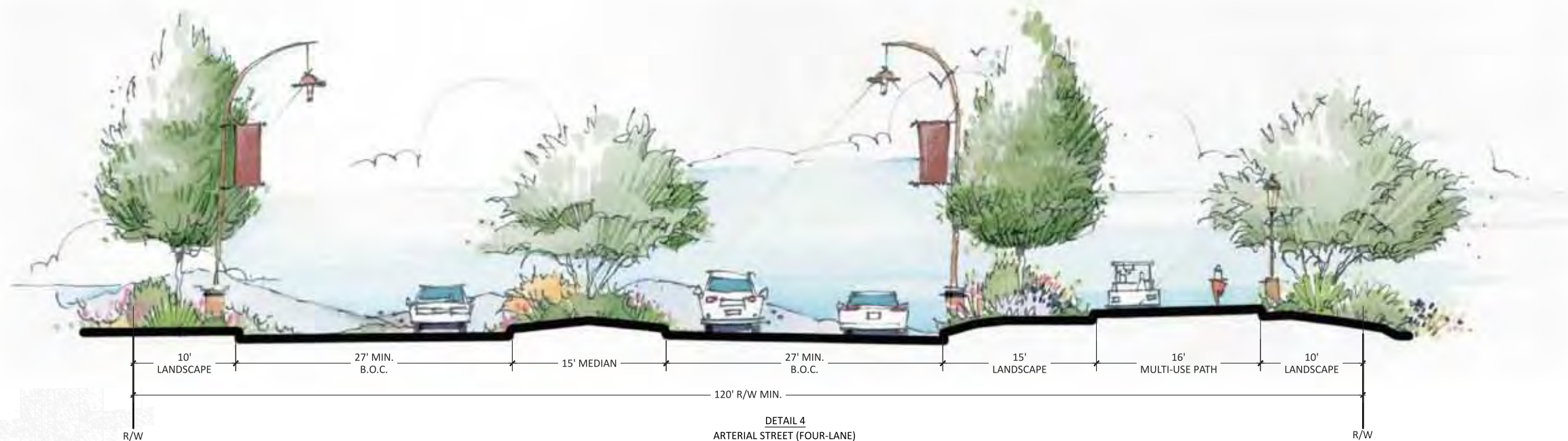
EXHIBIT 11: CONCEPTUAL TRAFFIC CIRCULATION PLAN

September 8, 2015

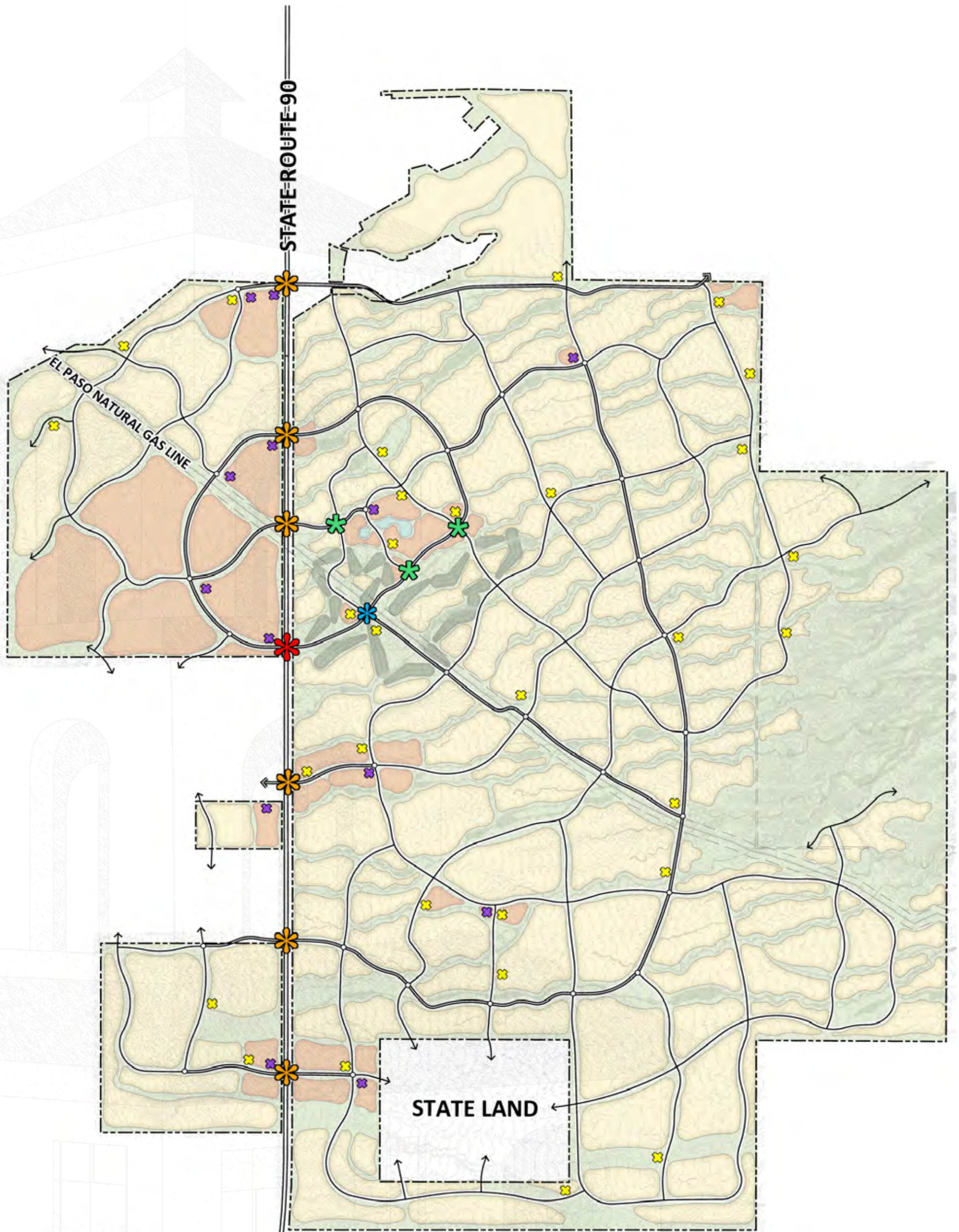




DETAIL 3
COLLECTOR STREET (TWO-LANE)
NOTE: ANY VARIATIONS WOULD REQUIRE APPROVAL FROM THE PLANNING DIRECTOR.



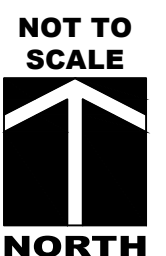
DETAIL 4
ARTERIAL STREET (FOUR-LANE)
NOTE: ANY VARIATIONS WOULD REQUIRE APPROVAL FROM THE PLANNING DIRECTOR.



LEGEND

-  Main Entry
-  Secondary Entry
-  Golf Course Entry
-  Town Center Portal
-  Amenity Monument
-  Commercial Monument

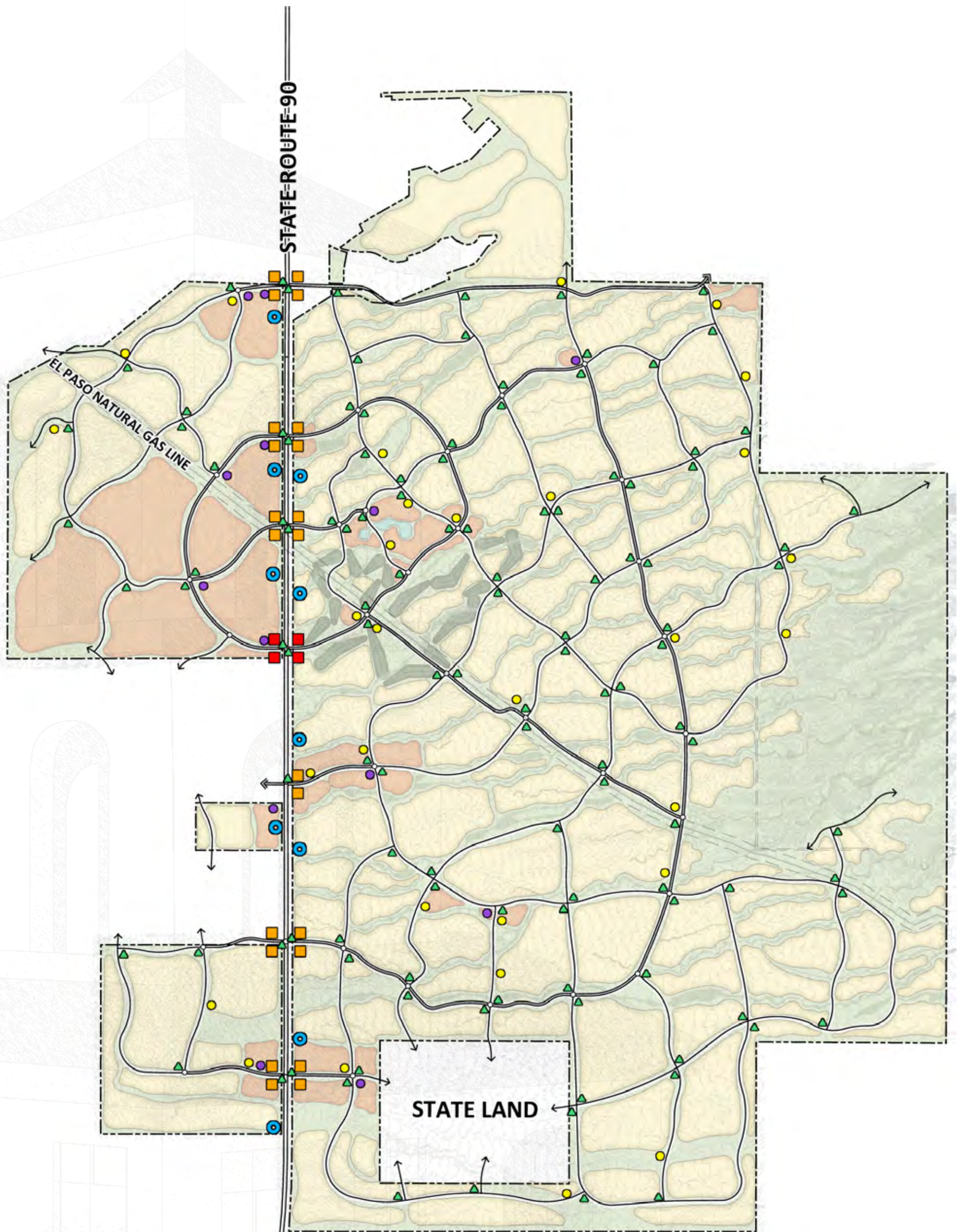
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EXHIBIT 13: MONUMENT MASTER PLAN

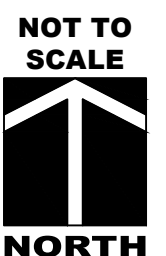
September 8, 2015



LEGEND

- Main Entry Signage
- Secondary Entry Signage
- Highway Signage
- ▲ Street Identification / Regulatory Signage
- Amenity Identification
- Commercial Icon

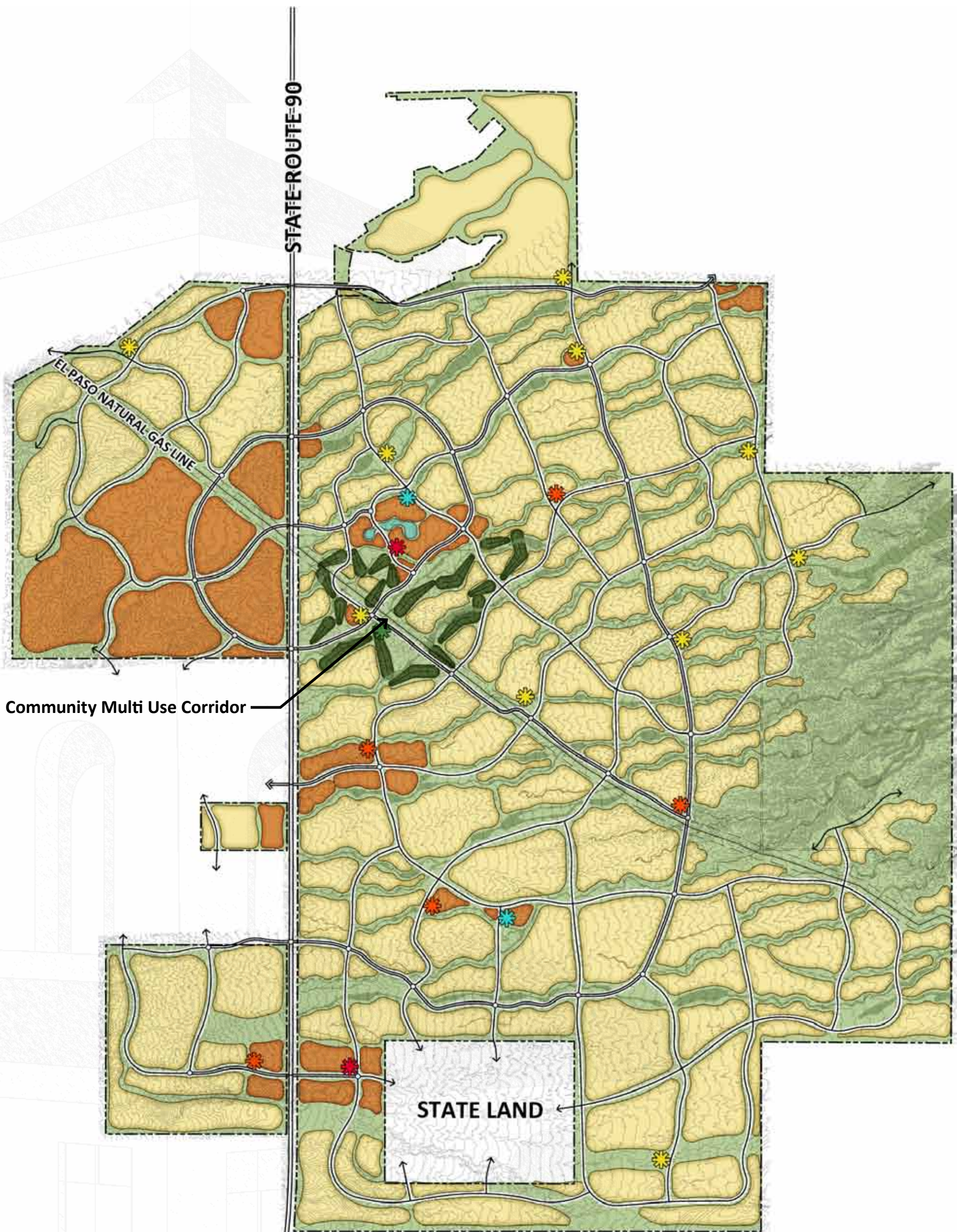
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EXHIBIT 14: SIGNAGE MASTER PLAN

September 8, 2015



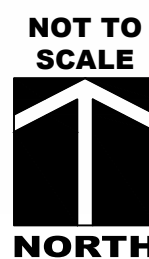
Community Multi Use Corridor

STATE LAND

LEGEND

- | | |
|---|---|
|  Residential |  Information Center |
|  Mixed Use |  Golf Club House |
|  Golf |  Recreation & Amenity Center |
|  Open Space |  Recreation & Amenity Center - Satellite |
| |  Public Services |

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EXHIBIT 15: LAND USE FINAL DEVELOPMENT PLAN

September 8, 2015

Vigneto - Land Use - Acreage & Density Forecast

Designation	Density	Dwellings	Percent	Acres
-------------	---------	-----------	---------	-------

Mixed Use		28,000	75.8%	9,217
-----------	--	--------	-------	-------

Residential	3.71	26,225		7,078
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Low Density	1.0 - 2.0	1,867		1556
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Low/Medium Density	2.0 - 3.5	6,544		2706
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Medium Density	3.5 - 6.0	7,139		1451
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Medium/High Density	6.0 - 10.0	8,838		1219
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High Density	10.0 - 20.0	1,838		147
--------------	-------------	-------	--	-----

Mixed Res / Comm	4.02	1,775		441
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Commercial				156
------------	--	--	--	-----

Medium Density	3.5 - 6.0	800		160
----------------	-----------	-----	--	-----

Medium/High Density	6.0 - 10.0	975		125
---------------------	------------	-----	--	-----

Commercial				271
------------	--	--	--	-----

Light Industrial				52
------------------	--	--	--	----

Business Park				65
---------------	--	--	--	----

Resort				220
--------	--	--	--	-----

Civic Facilities				892
------------------	--	--	--	-----

Recreational Facilities				46
-------------------------	--	--	--	----

Schools				152
---------	--	--	--	-----

Open Space (Useable)		20% Min	24.2%	2,950
----------------------	--	----------------	-------	-------

Natural Open Space				1600
--------------------	--	--	--	------

Developed Open Space				400
----------------------	--	--	--	-----

Golf				570
------	--	--	--	-----

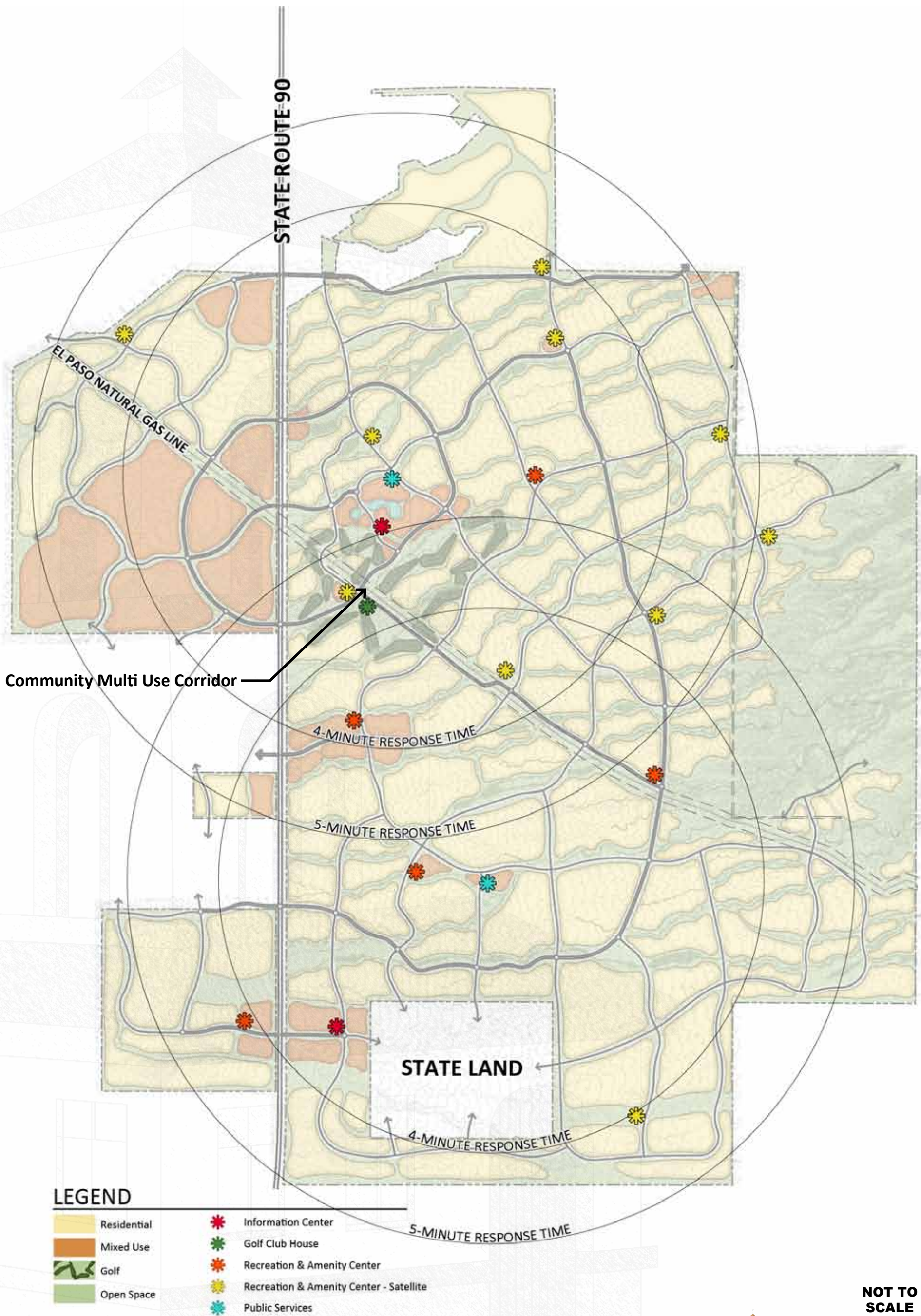
Agri Business				120
---------------	--	--	--	-----

Trail Systems				260
---------------	--	--	--	-----

	2.3 du/ac	28,000 Max	100%	12,167
--	-----------	-------------------	------	--------

Designation	Density	Dwellings	Percent	Acres
-------------	---------	-----------	---------	-------

Exhibit 16 - Land Use Budget (Acreage)



LEGEND

- | | |
|-------------|---|
| Residential | Information Center |
| Mixed Use | Golf Club House |
| Golf | Recreation & Amenity Center |
| Open Space | Recreation & Amenity Center - Satellite |
| | Public Services |

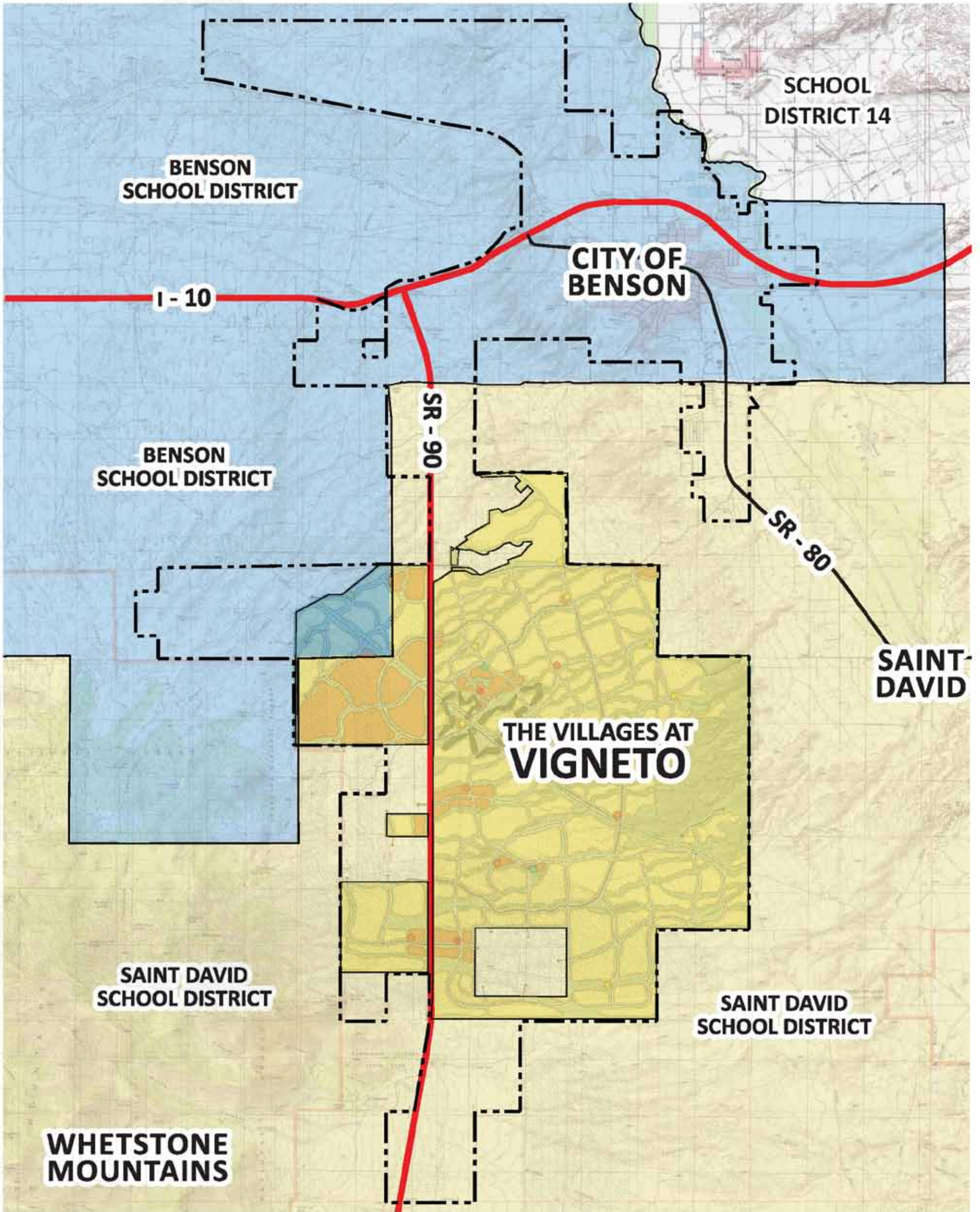
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EXHIBIT 17: CIVIC FACILITIES

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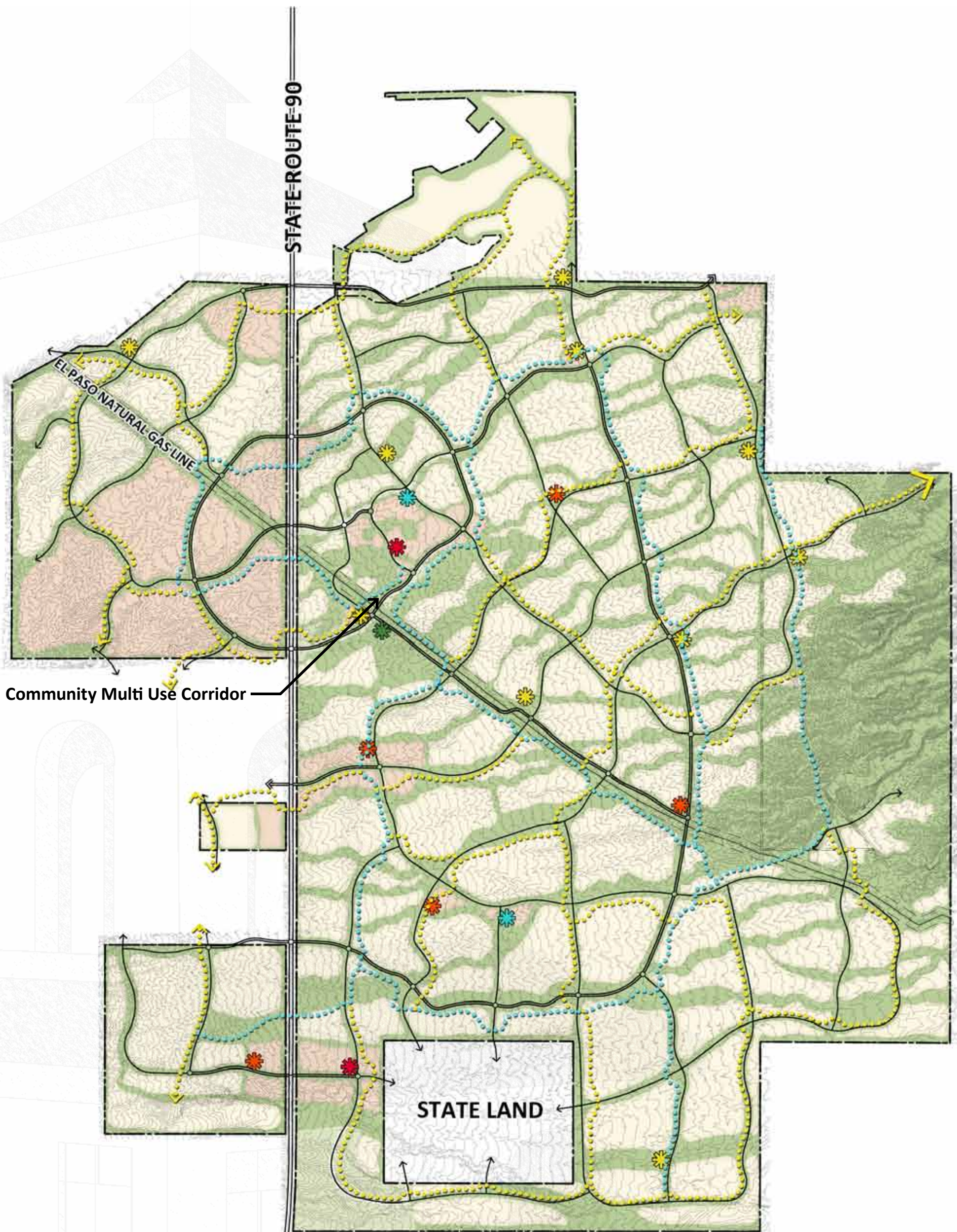
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EXHIBIT 18: SCHOOL DISTRICT BOUNDARY MAP

September 8, 2015



LEGEND

- | | | | |
|---|---------------------|---|---|
|  | Open Space Corridor |  | Information Center |
|  | Golf Course |  | Golf Club House |
|  | Major Trail |  | Recreation & Amenity Center |
|  | Minor Trail |  | Recreation & Amenity Center - Satellite |
| | |  | Public Services |

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