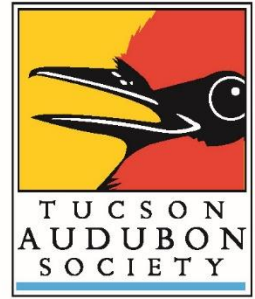


January 29, 2016
Benson City Council
Benson Planning and Zoning Commission
City Hall
120 W. 6th Street
Benson, Arizona 85602

Re: Villages at Vigneto Proposed Community Master Plan

Established in 1949, the Tucson Audubon Society (Tucson Audubon) is a 501(c)(3) non-profit conservation organization. We are the third largest local Audubon chapter in the nation and write to you on behalf of our membership in excess of 4,000 citizens. Tucson Audubon promotes the protection and stewardship of southeast Arizona's biological diversity through the study and enjoyment of birds and the places they live. Tucson Audubon advocates statewide for the sustainability, resilience, preservation, restoration and connectivity of habitats utilized by birds and other wildlife, with special emphasis on riparian habitats and their associated uplands.

We write to encourage the planners of both the City of Benson and Cochise County, who are assisting the City through an inter-governmental agreement, to fully consider and integrate conservation planning initiatives in compliance with Federal, State and Municipal laws as they plan for the Villages at Vigneto (Vigneto). We specifically encourage the permitting agency (the City of Benson) and the developer (El Dorado Holdings, Inc.), to consult closely with the Arizona Game and Fish Department (AzGFD), the U.S. Fish and Wildlife Service (FWS), the U.S. Army Corps of Engineers (ACE), the Environmental Protection Agency (EPA), the U.S. Geological Survey (USGS), the Coronado National Forest (FS), the Bureau of Land Management (BLM) and the Department of Defense (DOD - particularly Fort Huachuca) prior to finalizing any comments and recommendations regarding the proposed Villages at Vigneto Community Master Plan (CMP). Such consultations will bring to bear the best available science, planning, and mitigation strategies, and will provide solid footing for identifying legally and scientifically defensible exactions and conditions for the City's potential approval of a Final CMP. Effective, transparent consultation with these agencies will improve community quality of life and sustainability and give additional credibility to decisions the Benson City Council eventually makes regarding this high profile development.



*Leaders in conservation
and education since 1949*

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Because of the massive scale of the proposed Villages at Vigneto, and its ecologically sensitive location, these consultations should seek to better understand the dynamics of the San Pedro River Watershed's hydrogeomorphology, identify ways to minimize and offset undesirable impacts from groundwater pumping, and apply the principles of Conservation Biology to protect and enhance wildlife habitat and landscape-level wildlife habitat connectivity in the context of a changing climate.

Federal Consultation and Permitting

In our joint comment letter with the Huachuca Audubon Society submitted 11/25/2015, we emphasized that the approval of a Final CMP is premature until after key consultations and permitting processes are completed and their outcomes fully integrated into the CMP. This includes compliance with the Clean Water Act (Section 404), Endangered Species Act, Migratory Bird Treaty Act and the National Environmental Policy Act. These consultations and processes will provide crucial agency and public input that will identify mechanisms to avoid, minimize, mitigate and monitor impacts associated with the proposed development.

We urge that the Benson Planning and Zoning Commission and City Council make the completion of agency consultations and required Federal permitting processes a stipulation of approval for a Final CMP. If the City does not make such a stipulation, and consultation and required permitting do not occur in the appropriate sequence, this development will likely trigger the prospect of litigation of some sort and the City could have to pursue costly future CMP amendments to address the outcomes and requirements of such litigation. The wasteful expenditure of significant resources of money, time, and energy can be avoided by completing and integrating these processes in advance of, rather than after, consultation and due public process. As noted in our previous comments, outcomes and requirements from these processes could significantly alter Vigneto's configuration, water use, open space, circulation, plant pallet and other important elements of the CMP.

Arizona's Growing Smarter and Growing Smarter Plus Legislation

Growing Smarter (1998) legislation clarified and strengthened the ability of Arizona's municipalities and counties to: increase citizen involvement in the land planning process; develop more meaningful and predictable strategies to comprehensively plan for growth-related pressures; directly acquire and preserve open space; and protect our natural heritage so that future development will occur in a more rational, efficient and environmentally sensitive manner. Growing Smarter Plus (2000) legislation further enhanced land use planning by requiring that

larger and fast-growing cities and counties obtain voter approval of their general plans at least once every ten years and include a water resources element in their plans. These legislative efforts require and empower municipalities and counties to plan for growth in a responsible manner by encouraging regional coordination and by incorporating a conservation element in their plans which enables them, as permitting entities, to set aside open space to maintain public health and safety, provide for recreational opportunities, and support existent and future taxpayer's quality of life.

The location and overall configuration of natural undisturbed open space within Vigneto will be crucial for maintaining community values, promoting long-term sustainability, and protecting a connected network of lands that can sustain the area's impressive and sensitive biological diversity. Federal and state agencies should be actively engaged, in an open and transparent public process, in shaping the development's footprint, its water use and conservation, and its open space. This process should be informed by the best available science and should not be rushed.

City of Benson General Development Plan

In 2015, the City of Benson adopted a General Development Plan that contains the elements required by Growing Smarter and Growing Smarter Plus legislation. The Villages at Vigneto Final CMP should be consistent with the goals, recommendations and policies articulated in Benson's General Development Plan.

The Water Resources Element of Benson's General Development Plan states:

"The San Pedro River corridor has been identified as one of the City of Benson's key amenities, and its protection is viewed as one of the community's highest priorities. Of critical importance to the health of the corridor are the protection of vegetative buffers and habitat areas of the corridor. **Additionally, large tributary wash corridors should be maintained in their natural and unaltered state.** Coordination of local effort with the appropriate state agencies (notably Arizona Department of Game and Fish and the Bureau of Land Management) for long-term monitoring of the health of the San Pedro River corridor would be useful to gauge changes as development increases." (General Plan, p. 41, Water Resources Recommendations, emphasis added).

While preservation and long-term monitoring of lands directly astride the San Pedro River corridor and its tributaries is a positive and worthwhile goal, these recommendations will not, by themselves, protect the river, subsurface flows, its habitats, or the unique community amenities the river supports. There must be further study, of the middle San Pedro in particular, to better understand the connection between groundwater and surface water and to learn how increased development of groundwater resources may impact the surface water that sustains the river ecosystem and the wet cave system of the nearby Kartchner Caverns State Park.

“Objective 1.2: Encourage increased study and understanding of the City’s subsurface water resources for their long-term use and protection.” (City of Benson General Development Plan, p. 40, Water Resources Goals and Objectives).

“6. Work collectively with other jurisdictions and agencies to protect and maintain the San Pedro River corridor.” (Benson General Development Plan, p 42, Water Resources Policies)

To the best of our knowledge, since the 2015 Benson General Development Plan was adopted, the City has not yet “encouraged increased study and understanding of the City’s subsurface water resources” or demonstrated its intention to “work collectively with other jurisdictions and agencies to protect and maintain the San Pedro River corridor”. These objectives and policies should be a top priority, and would help to better inform and determine the magnitude of future development (with its concomitant groundwater pumping) the City can safely permit, including Vigneto.

“Numerous studies and reports have illustrated the potential sensitivity of the water resources feeding the Kartchner Caverns cave system. Developments in the vicinity of the cavern systems should take into consideration the subsurface resources and natural carrying capacity limits—particularly on groundwater extraction, surface runoff and landscape alterations.” (City of Benson General Development Plan, p. 41-42, Water Resources Recommendations).

We believe that the significant increases in groundwater pumping required to serve Vigneto will very likely have long-term consequences for the sustainability of the City of Benson, adjacent and downstream landowners, Kartchner Caverns, and upon the surface water flows that sustain the San Pedro River’s riparian corridor and its associated habitat values. Approving Vigneto without a much clearer understanding of the dynamic relationship between surface water,

subsurface geology and groundwater, risks forever compromising one of the “City of Benson’s key amenities” and “one of the communities highest priorities”.

Nguyen *et al.* 2014, in “*Long-term decrease in satellite vegetation indices in response to environmental variables in an iconic desert riparian ecosystem: the Upper San Pedro, Arizona, United States*”, state that:

“The Upper San Pedro River’s riparian forest is threatened by diminishing groundwater and surface water inputs, due to either changes in watershed characteristics such as changes in riparian and upland vegetation, or human activities such as regional groundwater pumping... Many cases of deterioration are due to direct impacts on river systems such as diversion of water for human use, flow regulation and introduction of invasive species (Poff et al., 1997)...

Concerns about the health of the riparian forest are partly due to an observed decrease in flows in the river over the past century (Thomas and Pool, 2006). **Groundwater contributions to the river base flow (estimated as the lowest 7-day flow period of the year) decreased by 66% from 1942 to 2000** (Miller et al., 2002; Thomas and Pool, 2006), and in 2005, the US Geological Survey stream gauge (09471000) at Charleston in the SPRNCA recorded zero flow over a 7-day period for the first time since it was installed in 1904 (Mac Nish et al., 2009). Similar flow reductions did not occur in other southeastern Arizona and southwestern New Mexico rivers over the same period (Thomas and Pool, 2006). ...**possible causes for flow reductions (include) lowering of groundwater levels near the river through regional pumping to support population growth in the watershed** (Serrat-Capdevila et al., 2007; Mac Nish et al., 2009) . . . Stromberg et al. (2009a) predicted that successional changes will take place on the river, with the bands of cottonwoods and willows narrowing due to lack of overbank flooding. They also predicted that ageing stands of cottonwoods would be replaced by other patch types such as mesquites and grasslands. Our analysis supports these predictions and demonstrates that these processes are already underway. ... Mac Nish et al. (2009) showed that **50 years of groundwater pumping has created a basin-wide cone of depression of the regional aquifer** that they suggested was a **key cause of base flow decline in the river . . . future research should continue to focus on the relationship between regional pumping, flows in the river and the health of the riparian forest . . .**” (emphasis added).

Given the City's clear mandates in its own General Development Plan to "encourage increased study and understanding of the City's subsurface water resources for their long-term use and protection" and, "to work collectively with other jurisdictions and agencies to protect and maintain the San Pedro River corridor" -- as well as the sobering scientific facts and conclusions summarized in Nguyen et al. (2014) and in the USGS Phase II Study¹ -- we call on the Benson City Council to reach out to the Governor, State Legislature, the Arizona Department of Water Resources, the U.S. Geological Survey, the Bureau of Land Management, and the developer to pursue and secure funding to complete Phase III of the USGS study of subsurface water flows to provide current, defensible information with which to make informed decisions. Such consultation and scientific study will better inform any decisions the City of Benson makes regarding the development of finite groundwater resources and ensure that they are consistent with the recommendations and policies of the City of Benson's General Development Plan.

Water Use, Drought Emergency & Climate Smart Planning

Arizona is now in year 17 of a state-declared drought emergency (PCA 99006, 1999)². This declaration has been reauthorized every year since its inception and states, ". . . the lack of precipitation has significantly reduced stream flows in the State's interior basins and reduced surface and groundwater supplies upon which citizens and commerce of the State are dependent." Unfortunately, the drought has continued and deepened. We are concerned that drought conditions may represent a new normal for the region.

According to the National Oceanic and Atmospheric Administration³, both 2014 and 2015 were sequentially the hottest years in recorded history, and this alarming trend shows no signs of abating. The latest climate change models predict a high probability for megadroughts (multi-decadal droughts with increased temperatures) to occur in our region in the coming decades.^{4,5} In addition, precipitation events are predicted to be less frequent, yet more intense when they do occur. Overall decreased precipitation coupled with increased evaporation associated with

¹ Hydrology of the Middle San Pedro Watershed, Southeastern Arizona, USGS in Cooperation with ADWR (2015): <http://pubs.usgs.gov/sir/2013/5040/pdf/sir20135040.pdf>

² Declaration of Drought Emergency, PCA 99006, accessed on 01/23/16: <http://www.azwater.gov/azdwr/statewideplanning/drought/documents/Droughtemergencydeclaration1999revised.pdf>

³ National Oceanic and Atmospheric Administration, State of the Climate: <https://www.ncdc.noaa.gov/sotc/>

⁴ Seager *et al.* Model Projections of an Imminent Transition to a More Arid Climate in Southwestern North America, *Science*, Vol. 316, pp. 1181-1184. Available online: <http://science.sciencemag.org/content/316/5828/1181>

⁵ Cook et al., 2015. Unprecedented 21st century drought risk in the American Southwest and Central Plains. *Science Advances*. Vol. 1, no. 1, e1400082, DOI: 10.1126/sciadv.1400082. Available online: <http://advances.sciencemag.org/content/1/1/e1400082>

rising temperatures will result in less surface water and thus declining infiltration into the regional aquifer. Even without additional anthropogenic groundwater pumping, the already water-stressed San Pedro River will likely become even more water-stressed. For this reason, “climate smart” planning and adaptation will become increasingly necessary.

The City of Benson’s General Development Plan Water Resource Element states:

“As precipitation rates vary from year to year, water recharge rates are neither consistent nor predictable. The preparation and implementation of a drought management plan and water recovery plan for the City of Benson is advised.” (Water Resource Recommendations, p. 64)

We agree with this recommendation. Avoidance of excessive water use in the first place is an obvious first step when planning for a hotter, drier future in our desert environment (11” of rainfall/year). Despite this, Vigneto proposes water-intensive uses inspired by Tuscany, Italy (36” of rainfall/year), and directly modeled after a development located in water-rich Ocala, Florida (52” of rainfall/year). Reigning in water use wherever possible by requiring aggressive water conservation measures, water harvesting, an arid-adapted appropriate plant pallet, and re-use and effective recharge will be essential if Benson is to have any hope of achieving sustainability in this increasingly water stressed environment. This recommendation is consistent with the City of Benson’s General Development Plan’s Water Resources Element:

“Objective 1.3: Encourage the implementation of water conservation measures in all new developments.” (General Development Plan, p 40-41, Water Resources Goals and Objectives)

Even with the best of water conservation measures in place, the sheer size of Vigneto and its proposed CMP causes serious concern for the mid to long-term sustainability of the proposed development and Benson itself.

In a 7/14/2015 letter from the FWS to the ACE regarding Endangered Species Act consultation on Vigneto, the Service expressed its concerns related to Vigneto’s water use:

“The other category of indirect effects pertains to the withdrawal of groundwater to serve residential and commercial development at the project site. It is likely that an appreciable volume of groundwater will be required to serve the development. If we assume a per capita water demand of 118 gallons (0.132 acre-feet/per day (AFD)) (GUAC, 2006) and two residents per each of the 28,000 dwelling units, we would anticipate at least 7,400

acre feet per annum (AFA) (approximately) would be withdrawn from the groundwater basin. This groundwater pumping would not occur but for the residential development.

Haney and Lombard (2005) provided indirect evidence that the floodplain alluvial aquifer at Three Links Farm, a conservation property on the San Pedro River downstream of Benson, is maintained by interbasin transfer of groundwater from the Benson Area; local mountain-front recharge is of insufficient volume to explain the quantities of alluvial water present at the site. Baseline deficit groundwater pumping was estimated to be 1,300 AFA in 2002 (Arizona Department of Water Resources, personal communication as referenced in Haney and Lombard 2005) in the Benson sub-area of the Upper San Pedro groundwater basin in which the proposed project is situated. If the large groundwater withdrawals required to serve the Villages at Vigneto development curtails this presumed subflow, we anticipate adverse effects to yellow-billed cuckoos (and the cuckoo's proposed critical habitat) as well as southwestern willow flycatchers (and the flycatcher's critical habitat in the middle and potentially lower reaches of the San Pedro River)."

Clearly, there is concern from responsible regulatory agencies and the greater public that the dramatic increase of water use will affect a much broader area in the San Pedro River Valley than just the municipality of Benson.

In a 12/28/2015 letter to the City of Benson from the Lower San Pedro Watershed, a 501(c)3 organization with **194 member** individuals, agencies and organizations, they state:

"The Lower San Pedro watershed is inextricably linked and affected by upstream activities. Therefore we are also deeply invested in the vitality of the upper and middle San Pedro River reaches. This proposed development to include 28,000 homes must be very carefully planned physically, socially, environmentally, and financially in order to prevent damage or injury to the San Pedro River Valley and its waters. To accomplish this, due diligence - thorough research - is essential . . . Planning at the watershed level is an important movement in the desert southwest, one that transcends county/community boundaries and recognizes that this endangered landscape offers future generations far more than another land and water base for exploitation of resources. The Lower San Pedro Watershed Alliance along with the Cascabel Conservation Association, agree with and support Tucson and Huachuca Audubon Societies' recommendation contained in their letter of November 25, 2015: to delay approval of the CMP until the Federal permitting processes have been completed."

This letter demonstrates and highlights the broad public concern for Vigneto's potential to impact the Lower San Pedro River and the livelihoods of the people who rely upon it. It is also a call to action for the City of Benson to engage in scientifically informed planning at the watershed level.

To this end, the City of Benson and Cochise County should be aware of, and wish to participate in, an emerging multi-jurisdictional and organizational climate-smart planning effort: the U.S. Department of Interior's (DOI) Desert Landscape Conservation Cooperative (DLCC). The non-regulatory DLCC is a bi-national regional partnership formed and directed by DOI resource management entities as well as interested public and private entities in the Mojave, Sonoran, and Chihuahuan Desert regions of the southwestern United States and northern Mexico. Through collaborative partnerships, the DLCC seeks to provide scientific and technical support, coordination, and communication to resource managers and the broader DLCC community to address climate change and other landscape-scale ecosystem stressors. The vision for the DLCC is "Resilient landscapes capable of responding to environmental challenges and supporting natural and cultural values for current and future generations."⁶

DLCC partners in Arizona include, but are not limited to: Bureau of Reclamation (BOR), FWS, BLM, FS, Department of Defense/Desert Managers Group (DOD), National Park Service (NPS), USGS, Bureau of Indian Affairs (BIA), AzGFD, Pima County, Rocky Mountain Bird Observatory (now Bird Conservancy of the Rockies), Sky Island Alliance (SIA), Sonoran Joint Venture (SJV), Audubon Arizona, Wildlands Network, Lower San Pedro Watershed Alliance, Cascabel Conservation Association, Friends of the San Pedro River, Sierra Club, Huachuca Audubon Society (HAS), Tucson Audubon Society (TAS), and the Arizona Land and Water Trust (ALWT).

In 2015, the DLCC solicited nominations for pilot Landscape Conservation Planning Designs (LCPDs) in the region. Nine proposals were presented, three of which overlapped in southeast Arizona: the San Pedro River Watershed, the Transboundary Madrean Watersheds, and the BLM-nominated Southeast Arizona area, based on BLM's recently released Madrean Archipelago Rapid Ecological Assessment (REA)⁷. These three nominations were combined into a larger Transboundary Madrean LCPD, one of only three pilot LCPDs selected for further development by the DLCC: "Through workshops and stakeholder input we are developing conservation goals and adaptive management actions for focal ecosystem types within our

⁶ Desert Landscape Conservation Cooperative Website, accessed 01/25/16: <http://www.usbr.gov/dlcc/science/design.html>

⁷ Available online at: http://www.blm.gov/wo/st/en/prog/more/Landscape_Approach/reas/madrean.html

geographic area: arid grasslands, shrublands, streams, seeps and springs, including aquatic and riparian resources. By working together to incorporate climate-smart adaptation into our existing decision processes across multiple jurisdictions, we can collectively work towards sustaining ecosystems for people and wildlife across the landscape.”

The DLCC provides a strong regional organizational network, the best available scientific information, expertise, and other resources such as funding for research that could greatly assist the City of Benson and Cochise County to acquire much needed data and to gain assistance to effectively integrate climate-smart planning into your own planning and decision making processes.

As suggested above, the City of Benson should consult with the Department of Defense, particularly with nearby Fort Huachuca, regarding planning for the anticipated impacts of drought and climate change. Executive Orders and Secretarial Directives have been issued that require planning for climate preparedness and resilience.^{8,9,10} Consistent with these policies and through the Department of Defense Legacy Program, Fort Huachuca has undertaken studies to plan for the threats posed by climate change to national security, including addressing water security¹¹ and species at risk¹².

Endangered Species Consultation

The Water Resources Element of Benson’s General Development Plan states:

“Special attention should be paid to plant and animal species sensitive to habitat disruption.” (General Plan, p. 41, Water Resources Recommendations, emphasis added)

To the best of our knowledge, neither the ACE nor the developer have initiated formal consultation with the FWS regarding impacts from the proposed Vigneto development upon

⁸ Executive Order 13653 -- Preparing the United States for the Impacts of Climate Change: <https://www.whitehouse.gov/the-press-office/2013/11/01/executive-order-preparing-united-states-impacts-climate-change>

⁹ Department of Defense Directive 4715.21: Climate Change Adaptation and Resilience: <http://www.dtic.mil/whs/directives/corres/pdf/471521p.pdf>

¹⁰ Department of Defense 2014 Climate Change Roadmap: <http://www.denix.osd.mil/sustainability/upload/CCAR-2014-Final-released-13Oct14.pdf>

¹¹ AUSA Contemporary Military Forum Enabling Victory in a Complex World: Resilient Army Installations, Page 15, Fort Huachuca Water: <http://am2015.ausa.org/wp-content/uploads/2015/10/ResilientArmyInstallations.pdf>

¹² Identifying Vulnerability of Threatened, Endangered, and At-Risk Species to Future Climate Change at Fort Huachuca, Arizona Project # 09-43: <http://www.denix.osd.mil/nr/upload/09-433-Identifying-Vulnerability-of-TERS-to-Future-Climate-Change-at-Fort-Huachuca-Arizona-Fact-Sheet.pdf>

threatened and endangered species – rare and declining species that are **most** “sensitive to habitat disruption”. Nor has the AzGFD been consulted.

As noted in our previous comments dated 11/25/2015, the Tucson Audubon Society recently concluded a survey for the threatened Western Yellow-billed Cuckoo that confirmed the presence of active Western yellow-billed Cuckoo territories located in close proximity to Vigneto’s planning boundary. These territories were located in both the Guindani and French Joe Canyons of the Whetstone Mountains. In the same 2015 survey season, Westland Resources, Inc. conducted Western Yellow-billed Cuckoo surveys on the Mitigation Parcel for Whetstone Ranch, which is located just downstream of the proposed Vigneto development on the west side of the San Pedro River. These surveys resulted in a total of twenty-four cuckoo detections, including two probable breeding territories and six possible breeding territories in the vicinity of the analysis area (Biological Evaluation for the Vigneto Mitigation Parcel, Westland Resources, Inc., December 18, 2015). To the best of our knowledge, cuckoo surveys have not yet been conducted on the 8,200 acre Whetstone Ranch parcel, or on the additional 4,000+ additional acres included in the Vigneto CMP.

In a letter from the FWS to the ACE dated 7/14/2015, the Service discusses the potential of Vigneto to directly and indirectly impact the federally threatened Western Yellow-billed Cuckoo:

“We have examined aerial imagery of the project area and it appears that similarly suitable xeroriparian nesting and foraging habitat exists in the numerous ephemeral channels and portions of the uplands within the project area. Levick *et al.* (2008) includes descriptions of the ecological value of such ephemeral streams as well as information indicating that they are relatively more susceptible to disturbance than perennial streams.

Moreover, yellow-billed cuckoos have been documented breeding in Madrean evergreen woodland adjacent to ephemeral streams in the Patagonia Mountains (WestLand, Inc. 2013a and 2013b). **Madrean evergreen woodlands also exist in the Whetstone Mountains immediately west of the project area, making it more likely that yellow-billed cuckoos occur in the intervening habitat between the mountain range and the San Pedro River, which necessarily includes the project area.**

Yellow-billed cuckoo habitat exists in and adjacent to the project area and there is a reasonable likelihood that the species occurs on the site. We do not consider

the partial avoidance and/or small buffering of ephemeral washes described in the *Habitat Mitigation and Monitoring Plan ACOE File No. 2003-00826-SDM Whetstone Ranch (Whetstone HMMP) (WestLand 2005)* to be sufficient to ensure there are no direct or indirect effects to yellow-billed cuckoo habitat on the development site.

It is for the reasons described above that we have determined that it is reasonably certain that the proposed action may directly affect the yellow-billed cuckoo. We strongly recommend that section 7 consultation be requested by your agency.”
(emphasis added).

Both ocelot and jaguar have been documented in recent years in the Whetstone Mountains. The jaguar that is currently roaming in the greater Santa Rita Mountains area is thought to be the same jaguar that was initially photographed in 2011 by a hunter in the Whetstone Mountains¹³. Ocelots have been documented in recent years in both the Whetstone and Huachuca Mountains. SIA documented an ocelot in the Whetstones in 2009 with a remote camera. More recently, a local hunter/resident treed an ocelot in the nearby Huachuca Mountains which was confirmed and photographed by AzGFD.¹⁴

Given that there are numerous threatened and endangered species that could be directly and indirectly affected by the development of Vigneto, and that the FWS has recommended formal consultation be initiated, we urge the City of Benson to require the developer to initiate formal consultation with the FWS as a condition of approval of a Final CMP. Given that formal consultation has not yet been initiated in the six months since the FWS' 7/14/2015 letter, we believe this stipulation would be reasonable and consistent with the City of Benson's General Development Plan that states, “**Special attention should be paid to plant and animal species sensitive to habitat disruption.**” (General Development Plan, p. 41, Water Resources Recommendations, emphasis added)

Vigneto's Open Space Element & Wildlife Habitat Connectivity

The Open Space Element of Benson's General Development Plan states:

“As Benson grows, there will be development pressure exerted on adjacent open lands. Therefore, **it is essential to preserve areas of special environmental sensitivity or outdoor experience from the impacts of urban expansion.** The Growth Areas Element, for instance,

¹³ http://www.fws.gov/news/ShowNews.cfm?ref=jaguar-and-ocelot-recently-photographed-by-monitoring-cameras-in-southern-a&_ID=30449

¹⁴ http://www.azgfd.gov/w_c/es/ocelot2.shtml

calls for a unique conservation sector to protect the San Pedro River.” (Benson General Development Plan, p. 52, emphasis added).

We agree with the FWS that “partial avoidance / small buffering of ephemeral washes” in the “intervening habitat” will not be sufficient to protect nesting, foraging and functional corridors for species like the Western Yellow-billed Cuckoo. Other species of conservation concern for which wildlife habitat connectivity should be accommodated include the endangered Jaguar, Ocelot, and Lesser Long-nosed Bat. Common species should also be considered to avoid further potential listings under the Endangered Species Act.

A multi-species linkage design should, at minimum, accommodate species identified in the Arizona Department of Transportation (ADOT) / AzGFD Arizona’s Wildlife Linkages Assessment¹⁵: Western Yellow-billed Cuckoo, Lesser Long-nosed Bat, Arizona Ridge-nosed Rattlesnake, Cave Myotis, Giant Spotted Whiptail, Javelina, Mexican Long-tongued Bat, Mexican Spotted Owl, Mountain Lion, Mule Deer, Northern Gray Hawk, and Texas Horned Lizard. Beier et al. (2008) recommend a **minimum** undisturbed linkage width of 1 kilometer for the following reasons:

“Wide linkages are beneficial for several reasons. They (1) provide adequate area for development of metapopulation structures necessary to allow corridor-dwelling species (individuals or genes) to move through the landscape; (2) reduce pollution into aquatic habitats; (3) reduce edge effects such as pets, lighting, noise, nest predation & parasitism, and invasive species; (4) provide an opportunity to conserve natural fire regimes and other ecological processes; and (5) improve the opportunity of biota to respond to climate change.” (Beier et al. 2008).¹⁶

The 2.03 version of the CMP incorporates numerous wash corridors into its open space network (Exhibit 19, Parks Trails and Open Space, p. 151). However, they are mostly very narrow in width (less than or equal to 0.25 km). As noted by Beier et al. (2008), narrow corridors are significantly less effective for facilitating wildlife use and movement due to a host of edge effects and disturbances associated with human developments. Consistent with the best available science, we recommend that multiple undisturbed, multi-species corridors connecting the Whetstone Mountains to the San Pedro River, each a minimum of 1 kilometer in width, should

¹⁵ Arizona’s Wildlife Linkages Assessment, Section VII. Potential Linkage Zones, page 108, Linkage 79, Whetstone – San Pedro River, online at: https://www.azdot.gov/docs/planning/section_vii_potential_linkage_zones.pdf?sfvrsn=5

¹⁶ Beier et al. 2008, Arizona Missing Linkages Reports, available online at: <http://corridordesign.org/linkages/arizona>

be integrated into the natural open space network of the Final CMP. This recommendation is consistent with the City of Benson's Water Resources Element: ". . . **large tributary wash corridors** should be maintained in their natural and unaltered state." (Benson General Development Plan, p. 41, Water Resources Recommendations, emphasis added).

We share the concerns articulated by the AzGFD in their 10/30/2015 comment letter on the Vigneto CMP regarding wildlife habitat connectivity across SR 90, which bisects the length of the development.

The AzGFD comment letter states:

"At this level of planning, it does not yet appear to have been determined the means by which recreationists would travel across State Route 90. The Department is aware of a few box culverts beneath the highway that are probably used by some wildlife to cross the highway. If the plan for the Villages at Vigneto is for hikers, mountain bikers, and other recreationists to use these culverts, this would diminish the suitability for wildlife use. The Department has considerable experience advising transportation agencies on the characteristics of effective and ineffective wildlife crossing structures and has found that structures regularly used by people do not effectively accommodate wildlife. The considerable increase in vehicle traffic on State Route 90 that would result from this massive development will dramatically increase the likelihood of vehicle-wildlife collisions in the absence of adequate wildlife crossing structures."

We recommend that the Final CMP should identify locations where pedestrians and recreationists will be able to safely cross SR 90, as well as separate locations intended to facilitate wildlife movement. Culverts and overland passages designed for wildlife passage and water conveyance across or under SR 90 should be integrated with the design of undisturbed open space corridors intended to facilitate wildlife movement. As noted by AzGFD, co-locating human paths and wildlife corridors together in the same location is undesirable and should be avoided if possible. We advise the City to consult with AzGFD and ADOT regarding this, and to review the available literature and online resources regarding siting and designing wildlife crossing structures that integrate driver safety, wildlife behavior and needs, topography, vegetation, fencing and other landscape elements.^{17,18,19,20}

¹⁷ Arizona Game and Fish Department Report on Culvert Construction to Accommodate Fish and Wildlife Movement Passage <http://www.azgfd.gov/hqis/pdfs/CulvertGuidelinesforWildlifeCrossings.pdf>

Plant Pallet

We share the concerns articulated by the AzGFD in their 10/30/2015 comment letter on the proposed CMP regarding Vigneto's proposed plant pallet.

The AzGFD points out the inconsistency between the CMP's lofty intent and the ecological realities concerning the proposed plant pallet:

“ . . . if the intent of the Villages at Vigneto design is truly to be “inspired and influenced by its surroundings”, “intended to create a lifestyle made possible only by the unique characteristics of the local natural environment”, show that “great care was taken to ensure the natural environment is enhanced or unharmed by the Development”, and “demonstrate how a properly designed community and the natural environment can coexist and benefit one another” as stated in the Plan, the use of many of the species in the plant palette is in direct conflict with such statements. For example, Russian olive (*Eleagnus angustifolia*) is widely recognized as an invasive, non-native tree and fountain grass (*Pennisetum setaceum*) is a non-native, invasive grass that can dramatically alter the native desert fire regime. Although the cultivar *P. setaceum rubrum* is purported to be non-invasive, including a plant that is so closely related to known noxious, invasive, non-native species such as buffelgrass (*P. ciliare*) or a number of other *Pennisetum* species is ill-advised. It would be more prudent to avoid planting species that are easily confused by the general public, thereby avoiding a predictable conflict with some residents' desires for showy non-native plants. Likewise, planting of Afghan, Aleppo, and Italian Stone pines, trees that clearly are not evocative of native Arizona landscapes, is counter to the notion of a thoughtfully designed community in harmony with the natural environment. Selecting native species for landscaping the Villages at Vigneto would be in keeping with Benson's historical setting as the “Gateway to the San Pedro Valley.””

Tucson Audubon advocates that the plant pallet for Vigneto consist of native plant species only. Native plants are desert-adapted and will provide the greatest benefit to endemic wildlife while conserving precious water resources.

¹⁸ Best Management Practices for Wildlife Corridors: http://corridordesign.org/dl/docs/corridordesign.org_BMPs_for_Corridors.pdf

¹⁹ Wildlife Crossing Structure Handbook, Design and Evaluation in North America (2011)
<http://www.cflhd.gov/programs/techDevelopment/wildlife/>

²⁰ Wildlife Crossings Toolkit, USDA Forest Service and USDI National Park Service: <http://www.fs.fed.us/wildlifecrossings/>

Conclusion

Tucson Audubon urges the City of Benson City Council, Planning and Zoning Commission and the developer to consult with all applicable county, state, and federal agencies, as well as conservation organizations and affected communities to inform the revision of the Villages of Vigneto CMP, and to initiate and/or integrate scientific research that will inform its decision making moving forward. Prior to approval of the Final CMP, we urge the Benson Planning and Zoning Commission and the City Council to require the completion of all consultations and federal permitting processes so that the outcomes of these processes can be fully integrated into the Final CMP.

Growing Smarter and Growing Smarter Plus legislation and the City of Benson's 2015 General Development Plan require effective consultation and community participation to shape the outcomes of new developments in our shared environment. The City of Benson's General Development Plan includes key recommendations and policies that provide a mandate for meaningful consultation and robust conservation and mitigation measures. The Final CMP for Vigneto must be consistent with Benson's General Development Plan. There is still room for significant improvement related to the development's size, configuration of the development footprint and open space network, water use, preservation of sensitive wildlife habitats, wildlife habitat connectivity and plant pallet. In addition, careful consideration of Vigneto's scale and design as it relates to drought and climate preparedness will be crucial in order to ensure long-term sustainability for human and ecological communities in the San Pedro River Valley.

Thank you for the opportunity to provide comments. Please contact us with any questions or concerns related to our comments and recommendations.

Sincerely,



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