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Mr. Dale Buskirk
Transportation Planning Division Director
Arizona Department of Transportation
206 S. 17th Ave., Room 31OB Phoenix, AZ 85007

Dear Mr. Buskirk:

On behalf of the Defenders of Wildlife, I appreciate the opportunity to provide comments on the Interstate 10 Tucson-Phoenix Bypass Feasibility Study.

Defenders of Wildlife (Defenders) is a national, not-for-profit conservation organization with over 522,000 members, including more than 16,500 members and activists who reside in Arizona. Defenders is dedicated to the protection of all native wild animals and plants in their natural communities. With offices throughout the United States as well as in Canada and Mexico, we work to protect and restore North America's native wildlife, safeguard habitat, resolve conflicts, and both educate and mobilize the public on important issues affecting wildlife. Through our Habitats and Highways Campaign and other efforts, Defenders works diligently with agencies to prevent and reduce conflicts between wildlife and our transportation systems, and disseminates information to the public to further this goal.

General Comments

Our organization is in opposition to ADOT's off-the-cuff I-10 bypass proposal because it is inconsistent with Arizona's Long Range Transportation Plan (MoveAZ), Arizona's Growing Smarter Initiative, the landmark Sonoran Desert Conservation Plan *and* the ADOT-sponsored Arizona Wildlife Linkages Assessment, among other regional conservation plans such as the Nature Conservancy's Ecoregional Assessments and the Sky Islands Wildlands Network. Upon analyzing the location of the proposed routes in relation to these detailed conservation planning efforts, it is evident the proposed bypasses are in direct opposition to the conservation of numerous sensitive wildlife species and wildlife habitats.

All of the proposed bypass routes will require disturbing undeveloped areas that provide vital habitat and movement corridors for many of Arizona's unique wildlife species, several of which -- like the Sonoran desert tortoise, Tucson shovel-nosed snake, cactus ferruginous pygmy owl and bighorn sheep -- are already imperiled. A new highway bypass would cause direct mortality and block movements for common species too, such as mule deer, mountain lion, black bear and mesopredators such as coyote, bobcat and kit fox, among many others (See Table 2 for full focal species lists)[1].

More specifically, each of the proposed routes would cut through and impact large, ecologically sensitive watersheds and landscapes. For instance, the San Pedro River Valley, where "Route 3" is proposed,

[1] Arizona's Wildlife Linkage Assessment: http://www.azdot.gov/Highways/OES/AZ_WildLife_Linkages/assessment.asp

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supports one of the most biologically diverse ecosystems in North America. This diversity stems from the San Pedro's location at the convergence of four major ecosystems—the Sierra Madre and Rocky Mountains, and the Sonoran and Chihuahuan deserts. The River and its larger watershed have plants and animals from all of these ecosystems. The San Pedro River and NCA harbor particularly incredible bird diversity—more than 100 species of breeding birds and an additional 250 species of migratory and wintering birds occur in the area, representing approximately half of all known avian species in North America. In addition to a diversity of birds, there are 84 species of mammals documented to occur along the San Pedro River corridor. The San Pedro is an important wildlife migration corridor linking populations in Mexico to their counterparts in the U.S. The San Pedro region has been designated as a World Heritage Natural Area by the United Nations World Heritage program and a Globally Important Bird Area by the National Audubon Society, American Bird Conservancy, and the International Commission for Environmental Cooperation. This is obviously not an appropriate route for a highway.

Locating a major highway in the Aravaipa and Avra Valleys (Routes 1 and 4, respectively) would put the integrity of nearby national forests, wilderness areas and national parks at stake. For instance, Route H, proposed through the Avra Valley, would negatively impact treasured public resources and recreation areas contained within the adjacent Tucson Mountain Park, Saguaro National Park, Ironwood National Monument, important elements of Pima County's Sonoran Desert Conservation Plan, and the Bureau of Reclamation's Central Arizona Project Canal Wildlife Mitigation Corridor in Avra Valley. (Figure 1).

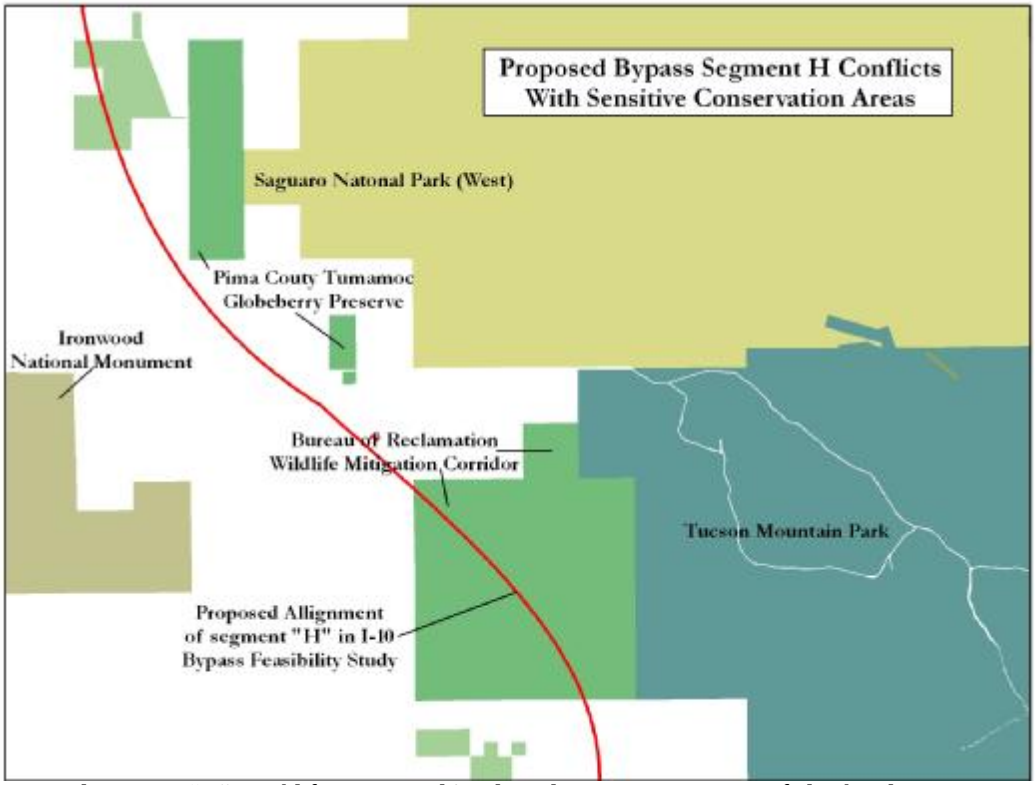

Figure 1. Propsed segment "H" would fragment and/or degrade numerous sensitive federal and county protected areas.

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In fact, the proposed alignment of the H segment would blow through the heart of this mitigation area, nullifying the purpose for which it was preserved. Management guidelines for this mitigation area explicitly state that future developments are prohibited in the area, and that the integrity of the area is to be maintained for both wildlife and special status plant species. Given the current land ownership configuration this mitigation area can not be avoided by proposed segment "H". The proposed alignment of segment H would also come within 6630 ft. of the Ironwood National Monument, within 3,260 ft of Saguaro National Park West, and would narrowly miss Pima County's Tumamoc Globeberry Preserve by 640 ft. All of these conservation areas would be degraded by both direct and indirect impacts of a major highway in such close proximity. Lastly, there is not enough room for a highway between tribal lands and the mitigation area. Similarly, segments L and M would degrade the ecological integrity of nearby wilderness areas in the immediate vicinity such as the Aravaipa Canyon Wilderness and other sensitive lands managed by the state and Coronado National Forest.

It has taken us a while, but after 100 years of road building, we have learned one undeniable fact: highways are bad for wildlife and other living things, including humans. When a major highway is built, it has major impacts that extend far beyond the pavement. In the last two decades, our understanding of *how* our highways impact wildlife and the environment has grown considerably with the rise of the science of "Road Ecology". Without question, we have made great strides in better understanding and mitigating the impacts roads and highways have on wildlife and habitat. Sadly, even the best mitigation cannot replace all the values lost when a highway is built through wildlife habitat. While roadkill can (and should) be substantially reduced with mitigation measures, roadkill is only a symptom of a much larger problem. Habitat destruction and fragmentation is the leading causes of species extinction. While our organization advocates and assists with mitigation projects on existing highways, we remain steadfast in opposing continued habitat losses to new highways and development.[2]

Construction of a freeway in any of the proposed route corridors would open adjacent areas up to new commercial and residential development far from existing urban centers, further fragmenting wildlife habitat, polluting the earth air and water, and encouraging more unwanted car and truck travel. ADOT's role in shaping the future of southern Arizona is critical. ADOT should be investigating and investing in alternatives to avoid the above-listed detrimental environmental impacts through intelligent and progressive transportation planning. ADOT should live up to commitments it has made to public safety, health and the environment. We can do better than a bypass!

Alternatives to a Bypass

ADOT should be planning and consulting with other agencies and entities to minimize the impact of our collective infrastructure's footprint upon our natural infrastructure. Instead of a bypass, we recommend transportation planning be integrated and bundled together other infrastructure elements such that they can be routed through established areas and disturbed travel corridors in the Sun Corridor (e.g. existing highways, railways, rail yards, power line corridors, water conveyances, etc.). This approach will also allow sensitive and less undisturbed areas such as wildlife corridor mitigation areas and protected areas to be avoided.

[2] White, Patricia. 2007. Getting Up To Speed: A Conservationist's Guide to Wildlife and Highways. Defenders of Wildlife.

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Planning at this scale points to the need to integrate transit, water and utility needs along with increasingly available information on sensitive and valuable natural resources across political lines. Such an approach is more likely to result in a plan that is environmentally and economically sustainable, and thus more palatable to the public. We argue that such a plan must capitalize on new alternatives and technologies that can more effectively address the problems at hand, such as increased mass transit and rail. Governor Napolitano has ordered ADOT officials to analyze the potential for mass transit in the state of Arizona. We look forward to reading this analysis, and engaging in public discourse related to this exciting potential.

Traffic volumes provided in the "Existing Traffic Volumes (2005)" map that was part of the Open House Displays demonstrate that the source of current congestion originates in and surrounding the cities of Tucson and Phoenix. Therefore, these congestion problems are best addressed at their source -- in the immediate Tucson and Phoenix areas -- with viable solutions such as improved public transportation. It is also apparent additional resources need to be invested in gathering detailed traffic data to be able to develop more informed decisions and solutions.

Anticipating increases in freight travel, a double track rail line would be a much more economical and practical choice. Rail would move freight three times as efficiently as trucks, reduce traffic congestion and greenhouse gas emissions, and increase highway safety by eliminating hazards related to excessive truck traffic. The bottom line: we need to get more freight off of trucks and on to rail.

Climate Change

Recognizing the profound implications that global warming and climate variation could have on the economy, environment and quality of life in the desert Southwest, Arizona Governor Janet Napolitano signed Executive Order 2005-02 on Feb. 2, 2005, establishing the Arizona Climate Change Advisory Group (CCAG). This group is working to establish a baseline inventory and forecast of greenhouse gas emissions in Arizona and produce an action plan with recommendations for reducing those emissions. The transportation sector is a major consumer of fossil fuels, and as such it is also a sector that must lead the way to reduce in greenhouse gas emissions. A bypass will only enable our inefficient car and truck-dependant culture, further fueling the climate change crisis. A bypass will not gain enough efficiency to be worth the energy and resources expended to construct and maintain it. In order to address climate change, we need solutions that will provide dramatic improvements in efficiency and overall reductions in greenhouse gas emissions. With major implications for extended drought and increasing temperatures due to climate change, constructing a bypass of this magnitude runs counter to all logic and reason.

Animals need to move across the landscape for daily, seasonal and life cycle requirements. Climate change is projected to force wildlife populations to move and shift their ranges in order to adapt to rapidly changing environmental conditions. As wildlife respond to global warming, wildlife linkages will become even more essential. Highway barriers and developments through these crucial linkages will hamper their ability to adapt and survive.

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Costs without Benefit

With gas prices skyrocketing and global warming a bigger concern than ever, we cannot afford to invest in environmentally degrading transportation plans such as the proposed I-10 bypass that will ultimately increase greenhouse gas emissions and degrade ecosystem integrity.

The cost of construction materials has risen almost 50% over the past 5 years. In 20-40 years, this massive highway construction project would be exorbitantly expensive.

The I-10 bypass is projected to cost up to $8 billion, and no funding source currently exists for the project. Even if this very conservative estimate was accurate, we anticipate it would cost approximately the same amount to implement an intercity rail service between Phoenix and Tucson. If Arizona is going to commit to a huge, 10-figure transportation expenditure, we should invest it in a sustainable, environmentally-conscious option that services this "megapolitan" area, the population of which is projected to reach 10 million in the next 30 years. This rate of growth is not inevitable, and is subject to numerous unpredictable variables. It is also not only how fast we grow, but how and where we grow that is vital to consider.

A bypass would divert cars and trucks away from existing businesses that are dependent upon commerce generated from traffic on existing highway alignment. For instance, the TTT truck stop off of I-10, 1 mile west of Wilmot in Tucson, has expressed opposition to the bypass proposal, as the financial income it depends upon from trucking traffic would likely be decreased significantly by routing potential customers away from it's Tucson-based business. Undoubtedly, this is just one example among many businesses and towns that would be economically crippled by a bypass.

Conclusion

Taken altogether, the environmental, historic, archeological, urban and economic impacts of implementing are unacceptable and can not be adequately mitigated for. Therefore, we encourage ADOT to abandon this ill-conceived I-10 bypass proposal, and instead focus on researching and implementing more sustainable and less environmentally damaging alternatives, such as highway widening and double-decking, improved public transportation, and inter-city rail designed to accommodate and contain the growing commuter and freight traffic in the Sun Corridor.

Our specific comments call into question the stated purpose and need of the feasibility study completed by the URS Corporation, and are designed to highlight all that is at stake on the ground that is represented in colorful lines and shapes on the maps provided herein. The route lines all traverse the "life lines" of other living, breathing organisms and ecosystems. To that end, we ask that if nothing else, the board and ADOT's transportation planners read and utilize its own, state-of-the-art Wildlife Linkage Assessment to inform its long-range transportation planning.

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Specific Comments

Purpose and Need

Purpose:

To provide an additional high-capacity transportation corridor to accommodate travel across southern and central Arizona.

Based upon the stated purpose, 5 needs were identified:

1. Provide alternative route to I-10 to relieve traffic congestion on I-10 in the Phoenix and Tucson metropolitan areas.
2. Provide a shorter, faster route through southern and central Arizona that will attract through trucks and other traffic from I-10.
3. Provide a new route that offers an alternative path for I-10 traffic during construction, maintenance, and incidents.
4. Provide a new transportation corridor to serve the expected rapid population growth and land development in the Sun Corridor.
5. Develop a corridor that is context sensitive to environmental and social elements.

Based upon our review of the feasibility study and the comments of numerous concerned citizens, we conclude that the URS report is not objective and is cursory. As such, it falls far short of accurately informing the Arizona Transportation Board and the public.

The stated purpose itself is biased against other viable alternative solutions -- solutions that have even more promise than does a bypass to "relieve traffic congestion on I-10 in the Phoenix and Tucson metropolitan areas". The fact that the URS feasibility study does not explore options such as double-decking Interstate 10 through the most problematic 7 miles of traffic congestion in Tucson demonstrates how the limited and biased scope of this study and as such nullifies its merit as a tool for informing decision makers. Numerous cities across the nation have demonstrated double-decking highways to be an effective solution to relieve congestion, including: Austin, Houston, San Antonio, Birmingham, Los Angeles, New York, Seattle, St. Louis and Tampa. Other solutions, such as the possibility of investing in intercity rail lines to accommodate increases in freight and commuter traffic are only given mere mention in the report. From the start, these potential solutions should have been evaluated on equal footing with the bypass concept. In the case of the URS-conducted feasibility study, it is bad practice to attempt to force a predetermined "fix" upon a problem before evaluating the merits of a full suite of potential solutions, some of which may be more elegant, less costly and less destructive.

The stated needs, arising from a biased purpose, are accordingly biased.

#1 This need is biased by the purpose of limited scope. This would not be a need if other more viable and cost-effective solutions were considered.

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#2 The need for an "alternative path" is not substantiated by the information provided in the URS report. The evidence in the report indicates that the vast majority of traffic congestion problems originate in the immediate Tucson and Phoenix areas. Thus, an alternative route that begins and ends away from these areas will do very little to address the problem.

#3 More effective alternatives to a 150+ mile bypass exist to address this need. This is a challenge that every major city with an Interstate faces, and should not be construed as a legitimate reason to build a bypass of this magnitude. The same principle stated in #2 above also applies to this "need".

#4 A bypass would not "serve the expected rapid population growth and land development in the Sun Corridor". As opposed to "serving rapid population growth" a bypass in the proposed areas would actually *facilitate* such rapid population growth, by opening up new undeveloped private and state lands to development that have not yet been developed because of their relative inaccessibility. A major highway bypass would instantly create this accessibility to motor vehicles and the unchecked development that would inevitably follow. Thus, a bypass would be a disservice to the public, as it would encourage growth into areas where growth is not desirable, nor sustainable.

#5 This need is impossible to meet given the limited options analyzed in the report. All of the proposed corridor routes would be severely damaging to sensitive environmental, cultural and social elements, as has been well documented in the report and by previous public comments. Thus, given the options provided by the URS report, the need to be "context appropriate" simply cannot be met via the construction of a bypass. The damage to wildlife and wildlife habitat that would be caused by a bypass across known wildlife habitat and corridors can not be adequately mitigated.

Human Safety and Liability

According to the National Highway Transportation Safety Administration, in 2003 over 200 people were killed by animal-vehicle collisions and over 10,000 people were injured. In the past five years, over 200,000 people were involved in a car crash because they were distracted by animals along the road side.[3] The roadway environment, which is defined as factors external to the driver and the vehicle such as animals along the roadside, is considered to be the second most prevalent contributing factor of crashes in the U.S. [4] Every year over 200 motorists are killed from animal – vehicle collisions, and another 29,000 injuries. The vehicle repair costs alone are estimated upwards of $700 million dollars.[5]

Despite these alarming statistics, wildlife-vehicle collisions are generally under reported.[6] From 1985 to 1991 the number of vehicle-wildlife collisions increased by 69 percent but this data includes only those

[3] U.S. Department of Transportation, National Highway Transportation Safety Administration (NHTSA), formerly the National Highway Safety Bureau (see www.nhtsa.dot.gov).
[4] Highway Safety, Factors contributing to traffic crashes and NHTSA's efforts to address them. U.S. Senate Committee on Commerce, Science and Transportation., Testimony, U.S. General Accounting Office, May 2003.
[5] Insurance Institute for Highway Safety & National Highway Traffic Administration, in article published in the Road Management & Engineering Journal, May 1997, by TranSafety, Inc
[6] Colorado State Patrol, News release April 2005, *Wildlife Overpass Proposed West of Vail Pass*, Southern Rockies Ecosystem Project.

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collisions that are reported and occurred on State maintained highways. It is probable that the limited reported data significantly understates the problem[7] and the actual number of wildlife-vehicle collisions is much higher.

The cost of liability to the state due to lawsuits relating to wildlife-vehicle collisions also cannot be discounted. Several years ago, Arizona lost a $3.1 million in the Booth v. Arizona lawsuit for failing to adequately prevent wildlife (in this case, an elk) from entering the right-of-way.. This precedent is a reminder that Arizona can be held liable for wildlife/vehicle accidents.

With this knowledge, it would be irresponsible from the perspective of public safety to route traffic through known wildlife linkages, riparian corridors and mountain passes, where hazards of the road environment related to wildlife/vehicle accidents and other road debris are heightened.

Roads and Highways Threaten Wildlife and Wildlife-dependent Economies

After a century of road building, the need to address conflicts between transportation and biodiversity has never been greater. Science and experience are revealing the devastating effects of roads on wildlife. Given these known and irreversible impacts, building new highways through prime wildlife habitat in this era of accelerated extinction rates is unacceptable. For example:

- It is estimated that 1.2 million deer die on U.S roads every year. Many smaller species are also killed but these are less noticed species and there is very limited data nationwide on what species are being killed and how many. Although large animals are most noticed, not all of them remain visible after being hit. It is estimated that 50% of deer hit on the road are able to leave the area, but most (92%) die as a result of the collision. [8]
- Slow-moving animals like turtles and salamanders have particular high risk of a fatal road crossing. In the summer of 1995, one researcher counted 205 flattened painted turtles on a 4.5 mile stretch of Highway 93 in Mission Valley in northwest Montana. [9]
- Increased traffic and habitat fragmentation has pushed the endangered Florida panther — one of the rarest mammals in the world — ever closer to extinction. With approximately 80-100 cats in existence, each individual killed on Florida's highways is a devastating loss. This year more panther deaths were caused by vehicle collisions than any other; 15 panthers were struck and killed in 2007, eclipsing 2006's record of 11 panthers killed by vehicles.
- The Florida black bear is another of the state's imperiled species that has suffered great losses on roads and highways. More than 800 bears were documented to have been killed by vehicles between 1976 and 2002. [10]

[7] From Vehicle-Animal Crashes: An increasing Safety Problem by members of the Institute of Transportation Engineers (ITE), August 1996, based on data from the FHWA Highway Safety Information System (HSIS), Institute of Transportation Engineers & Road Management & Engineering Journal.
[8] Utah State University: J.A. Bissonette, article, Scaling Roads and wildlife, the Cinderella principle, in Z.Jagdwiss 48 (2002).
[9] High Country News, Paonia, CO, *Flattened fauna need help*, by Sara Phillips, October 13, 1997.
[10] *SECOND NATURE: Improving Transportation Without Putting Nature Second*, SURFACE TRANSPORTATION POLICY PROJECT (STPP), headquartered in Washington, D.C. with offices in Sacramento, San Francisco, Albuquerque, and Pittsburgh.stpp@transact.org, and the DEFENDERS OF WILDLIFE, Washington,

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- An average of 194 elk, deer and moose are killed on Teton County roads each year.[11]
- In Vermont, 164 moose were killed by cars in 2002.[12]
- The Trans-Canada Highway cutting through Banff National Park used to be called the "meat-maker" because of frequent collisions of cars with elk, deer, grizzly bears and wolves.[13]
- Even in sparsely populated Montana, the state Department of Transportation counted 2,800 dead animals along roadsides in the 6-month period between Dec. 1, 1997 and May 31, 1998. [14]
- Roadkill has contributed to reducing the population of a federally endangered cat, the ocelot, to about 80 animals. [15]

These are only but a few examples of the devastating impacts of roads on wildlife species. For a list of focal species that would be negatively affected by each proposed bypass route, see Tables 1 and 2. The examples of impacts to wildlife listed above do not even begin to scratch the surface of the negative impacts highways have upon ecosystems, including cumulative impacts related to ground, water and air pollution, which negatively affect the health of human communities as well.

Wildlife associated recreation supports rural economies and added $50 billion to the national economy in 1996. Since 1996, the ecotourism economy has boomed. Visitors travel around the country and from around the world to enjoy America's natural wonders and wildlife. More than 82 million U.S. residents aged 16 and older fished, hunted, or watched wildlife in 2001, spending $108 billion dollars. This amounted to 1.1 percent of the Gross Domestic Product (GDP).[16]

Anticipated Ecological Impacts

The four-million-mile network of roads and highways has led to unprecedented mobility for Americans. But these roads continue to impact the mobility and survival of wildlife. As roads bisect the landscape, once connected wildlife habitats become fragmented and less permeable. Permeability is a measure of how easily traversed a landscape, or physical feature is for a particular species, or suite of species; or a

[11] Jackson Hole Wildlife Federation, http://jhwildlife.org/index.html
[12] Saving Lives of Moose and Men, *Highways Across U.S. Adapted to Reduce Collisions With Wildlife,* By Blaine Harden, Washington Post Staff Writer, Monday, May 3, 2004; Page A01
[13] idem
[14] High Country News, Paonia, CO, WESTERN ROUNDUP, Wildlife crossings cut down on roadkill by Mark Matthews, November 23, 1998.
[15] Animal World Network, http://www.animalworldnetwork.com/bwilandhigro.html
[16] SECOND NATURE: *Improving Transportation Without Putting Nature Second,* SURFACE TRANSPORTATION POLICY PROJECT (STPP), headquartered in Washington, D.C. with offices in Sacramento, San Francisco, Albuquerque, and Pittsburgh.stpp@transact.org, and the DEFENDERS OF WILDLIFE, Washington, D.C. www.defenders.org/habitat/highways.

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measure of the rates of movement for various species across barriers such as highways[17]. This measurement is related to the individual species' vagility, habitat preferences, topography, response to barriers, disturbance, noise, light, etc. Permeability has been estimated and mapped using "least cost path" GIS analysis[18]. Madjka et al.[19] have conducted such spatial analyses in Arizona to design multiple-species wildlife linkages for some of the highest priority areas. See the following section for a detailed analysis of identified wildlife linkages in relation to the proposed bypass. Major highways are formidable barriers to terrestrial wildlife, and as such they significantly decrease landscape-level habitat connectivity.

Animals are often forced to move across roadways in search of food, shelter or a mate and the result is often a deadly and gruesome recipe. For some species, busy roads and highways are avoided altogether, preventing important migration and dispersal events from occurring at all. One of the consequences of roadway barriers and the wildlife death trap they create is often smaller, more isolated populations of wildlife with a higher probability of local extinction. Fragmented populations are prone to wider fluctuations from year to year and are less resilient. The environmental impact of roadways extends far beyond the edge of the pavement. This "road-effect zone" is estimated to be 15 to 20 times as large as the actual paved right of way[20].

The responsibility to avoid environmental impacts altogether has never been greater. We can use newfound knowledge to not only improve transportation systems, but also to improve the environment simultaneously. ADOT should focus limited resources on fixing and improving current infrastructure instead of furthering the pervasive problem of habitat fragmentation[21]. If we can think ahead in terms of nature's bottom line, more sustainable transportation solutions will become second nature. This will sometimes require breaking the mold to implement alternative multi-modal solutions to our changing transportation needs.

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[17] Alexander, S.M., P.C. Paquet, and N.M. Waters. 2004. Carnivores, Roads and Habitat Permeability in the Canadian Rocky Mountains: A Community Level Study, Defenders of Wildlife Carnivores 2004 Conference Presentation.

[18] Singleton, Peter H., Gaines, William L., Lehmkuhl, John F. 2000. Landscape permeability for large carnivores in Washington: a geographic information system weighted-distance and least-cost corridor assessment. Res. Pap. PNW-RP-549. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest, Research Station. 89 p. [online] URL: http://www.fs.fed.us/pnw/pubs/rp549/).

[19] Madja, D., P. Beier and Bayless, 2007. Arizona Linkage Design Reports. Available at: http://www.corridordesign.org/arizona/download.php

[20] Forman, R. T. T., D. Sperling, J. A. Bissonette, A. P. Clevenger, C. D. Cutshall, V. H. Dale, L. Fahrig, R. France, C. R. Goldman, K. Heanue, J. A. Jones, F. J. Swanson, T. Turrentine, and T. C. Winter. 2003. *Road Ecology: Science and Solutions*. Island Press, Washington, D.C. 481 pages. [2003, 2nd printing].

[21] SECOND NATURE: *Improving Transportation Without Putting Nature Second,* SURFACE TRANSPORTATION POLICY PROJECT (STPP), headquartered in Washington, D.C. with offices in Sacramento, San Francisco, Albuquerque, and Pittsburgh.stpp@transact.org, and the DEFENDERS OF WILDLIFE, Washington, D.C. www.defenders.org/habitat/highways.

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ADOT-sponsored Wildlife Linkages Assessment

The Arizona Wildlife Linkages Workgroup is an important collaborative effort between public and private sector organizations working to address habitat fragmentation a cohesive, systematic approach in order to maintain and improve biodiversity in Arizona. Comprised of representatives from the Arizona Game and Fish Department, the Arizona Department of Transportation, the Federal Highway Administration, USDA Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service, Northern Arizona University, the Wildlands Project, and the Sky Island Alliance, the Workgroup has developed a statewide map identifying the state's wildlife movement linkages. This provides a valuable tool to guide future planning, engineering and mitigation efforts. Each linkage is described with respect to its ecoregional location, land ownership, and a general list of species it supports. The final report includes a statewide wildlife linkages map that delineates habitat blocks, connected by linkage and "fracture" zones that serve to connect the habitat blocks.

Unfortunately, it is apparent that ADOT's "right hand" does not appear to be communicating with its "left hand" so to speak, as each of the major bypass routes proposed would completely compromise the integrity of one or more wildlife linkages identified in the assessment it played a leadership role in developing. The assessment, released to the public on December, 2006, should have been included as an integral part of the ADOT-contracted feasibility study's "environmental constraints" analysis. This major oversight should be acknowledged and rectified. See Table 1 and Figure 2 for bypass / wildlife linkage conflicts. To learn more about each of these wildlife linkages and threats to their integrity, see ADOT's Arizona Wildlife Linkage Assessment full report.

Table 1. Summary: Bypass Segments & Threatened Wildlife Linkages

Bypass Segment	Wildlife Linkage(s) Threatened
C1	73, 74, 127, 151
E1	79
F2	78
H	79, 85, 92, 94
I8/SR85	73, 76, 151
K2	82, 88, 89
L	89
M2	84, 90

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Table 2. Wildlife Linkages & Focal Species Threatened by Proposed 1-10 Bypass Segments

Threatened Linkages / Bypass Segments	Place-based Linkage Names	Identified Focal Species
73 C1, I8/SR85	Gila Bend Mountains / North Maricopa Mtns.	Arizona Chuckwalla *Sauromalus ater* Banded Gila Monster *Heloderma suspectum cinctum* Big Free-tailed Bat *Nyctinomops macrotus* Bighorn Sheep *Ovis canadensis* California Leaf-nosed Bat *Macrotus californicus* Cave Myotis *Myotis velifer* Desert Rosy Boa *Charina trivirgata gracia* Greater Western Mastiff Bat *Eumops perotis californicus* Javelina *Tayassu tajacu* Long-legged Myotis *Myotis volans* Mountain Lion *Felis concolor* Mule Deer *Odocoileus hemionus* Pale Townsend's Big-eared Bat *Corynorhinus townsendii pallescens* Pocketed Free-tailed Bat *Nyctinomops femorosaccus* Sonoran Desert Tortoise *Gopherus agassizii* Yuma Clapper Rail *Rallus longirostris yumanensis* Yuma Myotis *Myotis yumanensis*
74 C1	North Maricopa Mtns. / Sierra Estrella Mtns.	Arizona Chuckwalla *Sauromalus ater* Banded Gila Monster *Heloderma suspectum cinctum* Big Free-tailed Bat *Nyctinomops macrotus* Bighorn Sheep *Ovis canadensis* Bobcat *Lynx rufus* California Leaf-nosed Bat *Macrotus californicus* Cave Myotis *Myotis velifer* Greater Western Mastiff Bat *Eumops perotis californicus* Javelina *Tayassu tajacu* Long-legged Myotis *Myotis volans* Mountain Lion *Felis concolor* Mule Deer *Odocoileus hemionus* Pale Townsend's Big-eared Bat *Corynorhinus townsendii pallescens* Pocketed Free-tailed Bat *Nyctinomops femorosaccus* Sonoran Desert Tortoise *Gopherus agassizii* Yuma Myotis *Myotis yumanensis*
76 I8/SR85	South Maricopa Mtns. / Sand Tanks	Arizona Chuckwalla *Sauromalus ater* Banded Gila Monster *Heloderma suspectum cinctum* Big Free-tailed Bat *Nyctinomops macrotis* Bighorn Sheep *Ovis canadensis* Bobcat *Lynx rufus* Cactus Ferruginous Pygmy-owl *Glaucidium brasilianum cactorum* California Leaf-nosed Bat *Macrotus californicus* Cave Myotis *Myotis velifer* Greater Western Mastiff Bat *Eumops perotis californicus* Great Plains Narrow-mouthed Toad *Gastrophryne olivacea* Javelina *Tayassu tajacu* Kit Fox *Vulpes macrotis* Lesser Long-Nosed Bat *Leptonycteris curasoae yerbabue* Long-legged Myotis *Myotis volans*

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		Mountain Lion *Felis concolor* Mule Deer *Odocoileus hemionus* Pale Townsend's Big-eared Bat *Corynorhinus townsendii pallescens* Pocketed Free-tailed Bat *Nyctinomops femorosaccus* Sonoran Desert Tortoise *Gopherus agassizii* Yuma Myotis *Myotis yumanensis*
78 **F2**	**State Route 79**	Bighorn Sheep *Ovis canadensis* Bobcat *Lynx rufus* Cactus Ferruginous Pygmy-owl *Glaucidium brasilianum cactorum* Javelina *Tayassu tajacu* Kit Fox *Vulpes macrotis* Mountain Lion *Felis concolor* Mule Deer *Odocoileus hemionus* Sonoran Desert Tortoise *Gopherus agassizii* Tiger Rattlesnake *Crotalus tigris* Tucson Shovel-nosed Snake *Chionactis occipitalis klauber*
***79** **E1**	**Ironwood -- Tortilita**	Bighorn Sheep *Ovis canadensis* Bobcat *Lynx rufus* Cactus Ferruginous Pygmy-owl *Glaucidium brasilianum cactorum* Cave Myotis *Myotis velifer* Javelina *Tayassu tajacu* Kit Fox *Vulpes macrotis* Mountain Lion *Felis concolor* Mule Deer *Odocoileus hemionus* Sonoran Desert Tortoise *Gopherus agassizii* Western Burrowing Owl *Athene cunicularia hypugaea*
82 **K2**	**Santa Catalina / Galliuro**	Black Bear *Ursus americanus* Bighorn Sheep *Ovis canadensis* Mexican Spotted Owl *Strix occidentalis lucida* Mountain Lion *Felis concolor* Mule Deer *Odocoileus hemionus* Southwestern Willow Flycatcher *Empidonax traillii extimus* Native Fishes White-tailed Deer *Odocoileus virginianus*
84 **M2**	**Pinaleno / San Simon Valley**	Bobcat *Lynx rufus* Javelina *Tayassu tajacu* Lesser Long-nosed Bat *Leptonycteris curasoae yerbabuen* Mexican Long-tongued Bat *Choeronycteris mexicana* Mountain Lion *Felis concolor* Mule Deer *Odocoileus hemionus*
85 **H**	**Avra Valley**	Bobcat *Lynx rufus* Cactus Ferruginous Pygmy-owl *Glaucidium brasilianum cactorum* Javelina *Tayassu tajacu* Kit Fox *Vulpes macrotis* Mountain Lion *Felis concolor* Sonoran Desert Tortoise *Gopherus agassizii*

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88	**Galliuro / Winchester / Dragoons**	Black Bear *Ursus americanus* Chiracahua Leopard Frog *Rana chiricahuensis* Grassland Birds Javelina *Tayassu tajacu* Mexican Long-tongued Bat *Choeronycteris mexicana* Mountain Lion *Felis concolor* Mule Deer *Odocoileus hemionus* Ornate Box Turtle *Terrapene ornata* Plains Leopard Frog *Rana blairi* Texas Horned Lizard *Phrynosoma cornutum*
K2		
89	**Wilcox Playa / Winchester / Pinaleno / Dos Cabezas**	Bobcat *Lynx rufus* Chiracahua Leopard Frog *Rana chiricahuensis* Javelina *Tayassu tajacu* Kit Fox *Vulpes Macrotis* Mexican Spotted Owl *Strix occidentalis lucida* Mountain Lion *Felis concolor* Mule Deer *Odocoileus hemionus* Ornate Box Turtle *Terrapene ornata* Plains Leopard Frog *Rana blairi* Pronghorn *Antilocapra americana* Texas Horned Lizard *Phrynosoma cornutum* Western Burrowing Owl *Athene cunicularia hypugaea*
K2		
90	**Pinaleno / Dos Cabezas / San Simon Valley**	California Leaf-nosed Bat *Macrotus californicus* Fringed Myotis *Myotis thysanodes* Jaguar *Panthera onca* Javelina *Tayassu tajacu* Long-legged Myotis *Myotis volans* Mexican Spotted Owl *Strix occidentalis lucida* Mule Deer *Odocoileus hemionus* Ornate Box Turtle *Terrapene ornata* Pale Townsend's Big-eared Bat *Corynorhinus townsendii pallescens* Texas Horned Lizard *Phrynosoma cornutum*
M2		
92	**San Xavier / Sierrita / Santa Rita**	Black Bear *Ursus americanus* Cave Myotis *Myotis velifer* Giant Spotted Whiptail *Aspidoscelis burti stictogrammus* Gila Topminnow *Poeciliopsis occidentalis occidentalis* Jaguar *Panthera onca* Lesser Long-nosed Bat *Leptonycteris curasoae yerbabuenae* Lowland Leopard Frog *Rana yavapaiensis* Mountain Lion *Felis concolor* Yellow-nosed Cotton Rat *Sigmodon ochrognathus* Western Yellow-billed Cuckoo *Coccyzus americanus occidentalis*
H		
***94**	**Rincon / Whetstone / Santa Rita**	
H		

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		Black Bear *Ursus americanus* Chiracahua Leopard Frog *Rana chiricahuensis* Giant Spotted Whiptail *Aspidoscelis burti stictogrammus* Gila Chub *Gila intermedia* Gila Topminnow *Poeciliopsis occidentalis occidentalis* Javelina *Tayassu tajacu* Lesser Long-nosed Bat *Leptonycteris curasoae yerbabuenae* Longfin Dace *Agosia chrysogaster* Lowland Leopard Frog *Rana yavapaiensis* Mexican Long-tongued Bat *Choeronycteris mexicana* Mexican Spotted Owl *Strix occidentalis lucida* Mountain Lion *Felis concolor* Northern Gray Hawk *Asturina nitida maxima* Ornate Box Turtle *Terrapene ornata* Sonoran Desert Tortoise *Gopherus agassizii* Western Red Bat *Lasiurus blossevillii* Western Yellow-billed Cuckoo *Coccyzus americana occidentalis* White-tailed Deer *Odocoileus virginianus*
127 **C1**	**Margies Peak / Sheep Mtn.**	Arizona Chuckwalla *Sauromalus ater* Banded Gila Monster *Heloderma suspectum cinctum* Big Free-tailed Bat *Nyctinomops macrotus* Bighorn Sheep *Ovis canadensis* California Leaf-nosed Bat *Macrotus californicus* Cave Myotis *Myotis velifer* Desert Rosy Boa *Charina trivirgata gracia* Greater Western Mastiff Bat *Eumops perotis californicus* Javelina *Tayassu tajacu* Long-legged Myotis *Myotis volans* Mountain Lion *Felis concolor* Mule Deer *Odocoileus hemionus* Pale Townsend's Big-eared Bat *Corynorhinus townsendii pallescens* Pocketed Free-tailed Bat *Nyctinomops femorosaccus* Sonoran Desert Tortoise *Gopherus agassizii* Yuma Clapper Rail *Rallus longirostris yumanensis* Yuma Myotis *Myotis yumanensis*
151 **C1**	**Gila-Salt River Corridor / Granite Reef Dam / Gillespie Dam**	Arizona Chuckwalla *Sauromalus ater* Bald Eagle *Haliaeetus leucocephalus* Black-bellied Whistling-duck *Dendrocygna autumnalis* Cactus Ferruginous Pygmy-owl *Glaucidium brasilianum cactorum* California Leaf-nosed Bat *Macrotus californicus* Desert Pupfish *Cyprinodon macularius* Desert Sucker *Catostomus clarki* Least Bittern *Ixobrychus exilis* Lowland Leopard Frog *Rana yavapaiensis* Roundtail Chub *Gila robusta* Sonora Sucker *Catostomus insignis* Sonoran Desert Tortoise *Gopherus agassizii* Southwestern Willow Flycatcher *Empidonax traillii extimus* Western Burrowing Owl *Athene cunicularia hypugaea* Western Yellow Bat *Lasiurus xanthinus* Western Yellow-billed Cuckoo *Coccyzus americanus occidentalis* Yuma Clapper Rail *Rallus longirostris yumanensis*

*GIS-based, multi-species linkage designs have been modeled for these linkage zones.

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In addition, this effort has spurred on additional research conducted by the Beier Lab of Wildlife Ecology and Conservation Biology at Northern Arizona University. This research has applied advanced spatial modeling techniques to generate multi-species wildlife linkage designs for a suite of high priority linkage zones identified through the workshops. As such, these designs are more refined versions of the more generalized linkage zones identified in the statewide assessment. Through a combination of wildlife expert parameterization, advanced GIS modeling, and fieldwork, detailed linkage designs (maps) and recommendations have been developed for 8 high priority areas.

A linkage design for Linkage #79, which connects the Ironwood National Monument to the Picacho Mountains, would be severely compromised by D2, E1 and H bypass segments. Similarly, the wildlife linkage design connecting the Rincon to Santa Rita and Whetstone mountain ranges, Linkage #94, would be degraded by edge effects of the proposed route H cutting across its western edge (see Figures 2 and 4, as well as Table 1). While GIS-based linkage *designs* have not been created for all of the priority linkages zones, the zones provide clear guidance as to where new barriers such as highway bypasses, are inappropriate and should be avoided (Figure 1). Wildlife linkages are a vital component of our "green infrastructure", and as such should be included as environmental constraints to be avoided in any study for proposed highways or other transportation infrastructure. ADOT's cutting edge Arizona's Wildlife Linkage Assessment should be front and center in discussions and analysis, so as to avoid the further endangerment of sensitive species.

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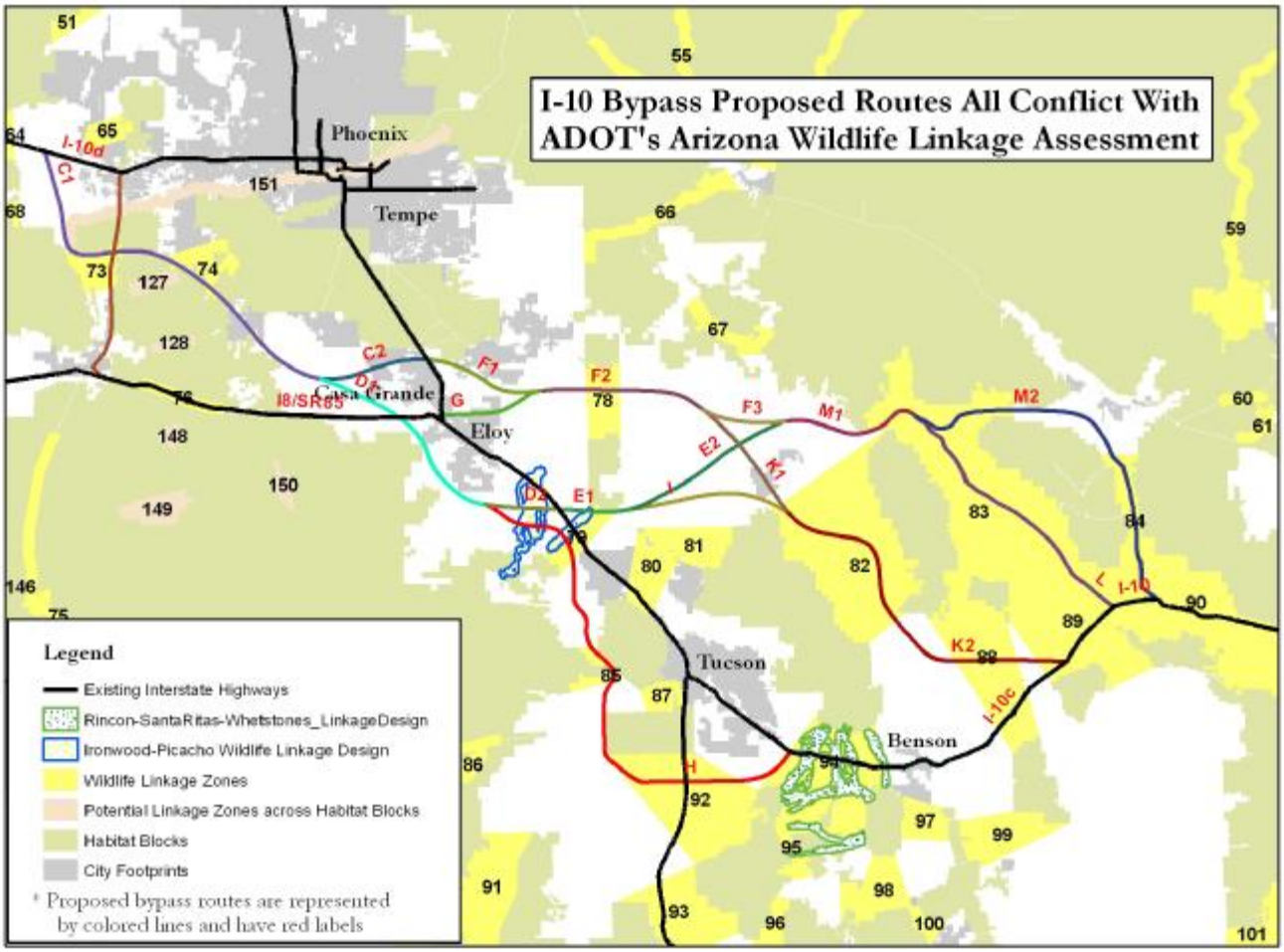

Figure 2. All of the proposed bypass routes intersect and would permanently fragment one or more wildlife linkages identified in ADOT's Wildlife Linkage Assessment. This is an important "environmental constraint" not considered in the preliminary feasibility study. Note the two linkage designs (outlined in blue and green) in relation to segment H.

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The Nature Conservancy's Ecoregional Assessments

The Nature Conservancy completed Ecoregional conservation assessments for the southwestern U.S. and northwestern Mexico between 1999 and 2004. They were designed to identify an efficient network of lands where the viability of the region's biological diversity can be maximized by abating major threats. Assessments are systematic and comprehensive analyses that represent a new, synthetic data source for more than 1300 species and ecological systems found in the southwestern U.S. and northwestern Mexico. The I-10 bypass, especially segments K1, K2, M1, F3, K1, K2 and H would constitute a major threat to the integrity of these areas targeted for conservation action (see Figure 3). The Nature Conservancy's science-based Ecoregional Assessments provide additional credence to the importance of maintaining the integrity of currently intact habitats, and should also have been included as a layer in the "environmental constraints" analysis. To ignore blueprints for the conservation of our ecosystems and to propose a highway directly through them is not acceptable. The fact that some of the lands ifentified in TNC's assessments do not yet enjoy official legal protections does not mean they should have been ignored. Given their high ecological value, ADOT should show more restraint when planning for transportation and growth in or near ecologically sensitive lands that have been identified for future conservation action.

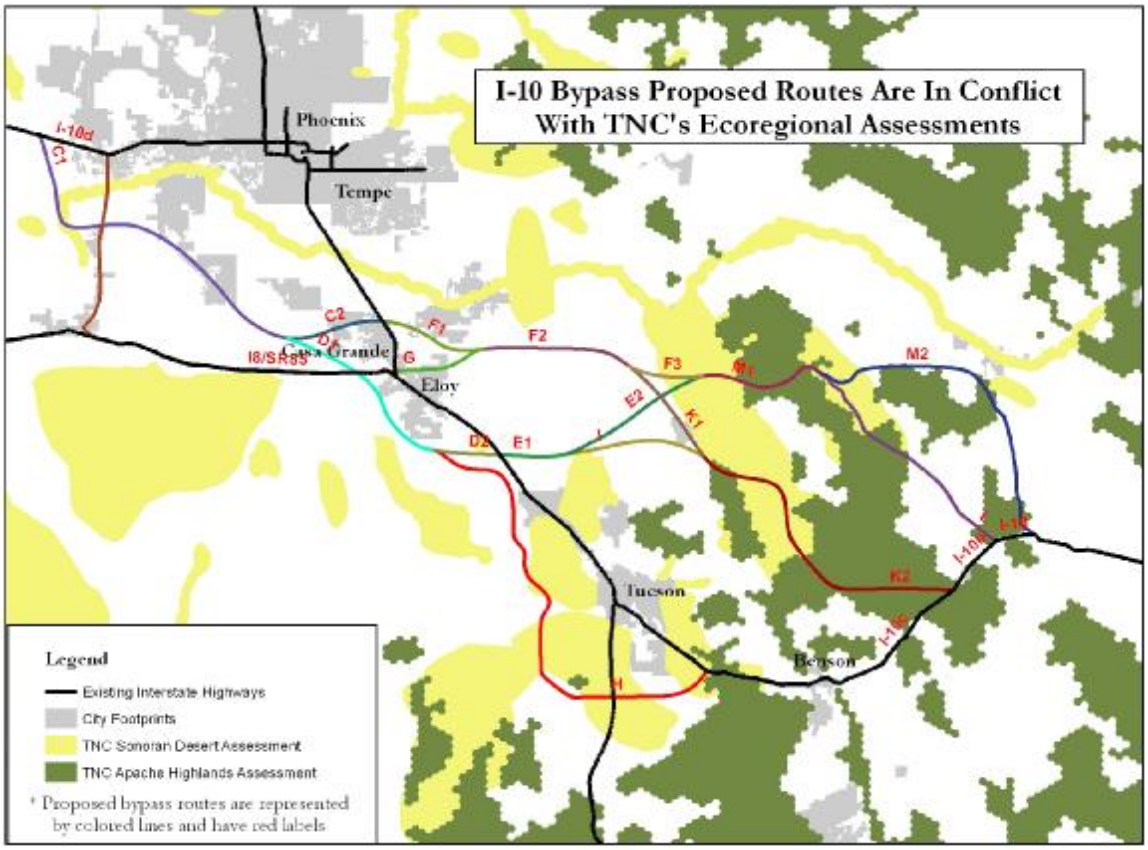

Figure 3. Proposed I-10 bypass segments overlaid upon The Nature Conservancy's Sonoran Desert and Apache Highlands Ecoregional Assessments. Numerous routes would further fragment and degrade important core habitats identified by the regional assessments.

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Pima County Sonoran Desert Conservation Plan

Many years of hard work, including public processes, scientific inquiry, conservation planning, and land acquisition have been invested in the development of Pima County's Sonoran Desert Conservation Plan. This conservation plan, still under development, is among the top conservation plans in the nation. All of the proposed bypass segments would compromise the integrity of this blueprint for the conservation and recovery of threatened and endangered species in the region. The SDCP's Biological Corridors and Critical Habitat Map (Figures 4 and 5) delineates numerous important conservation areas and wildlife corridors that closely match and re-emphasize what is reported in ADOT's Wildlife Linkage Assessment (Figure 2) and The Nature Conservancy's Ecoregional Assessments (Figure 3).

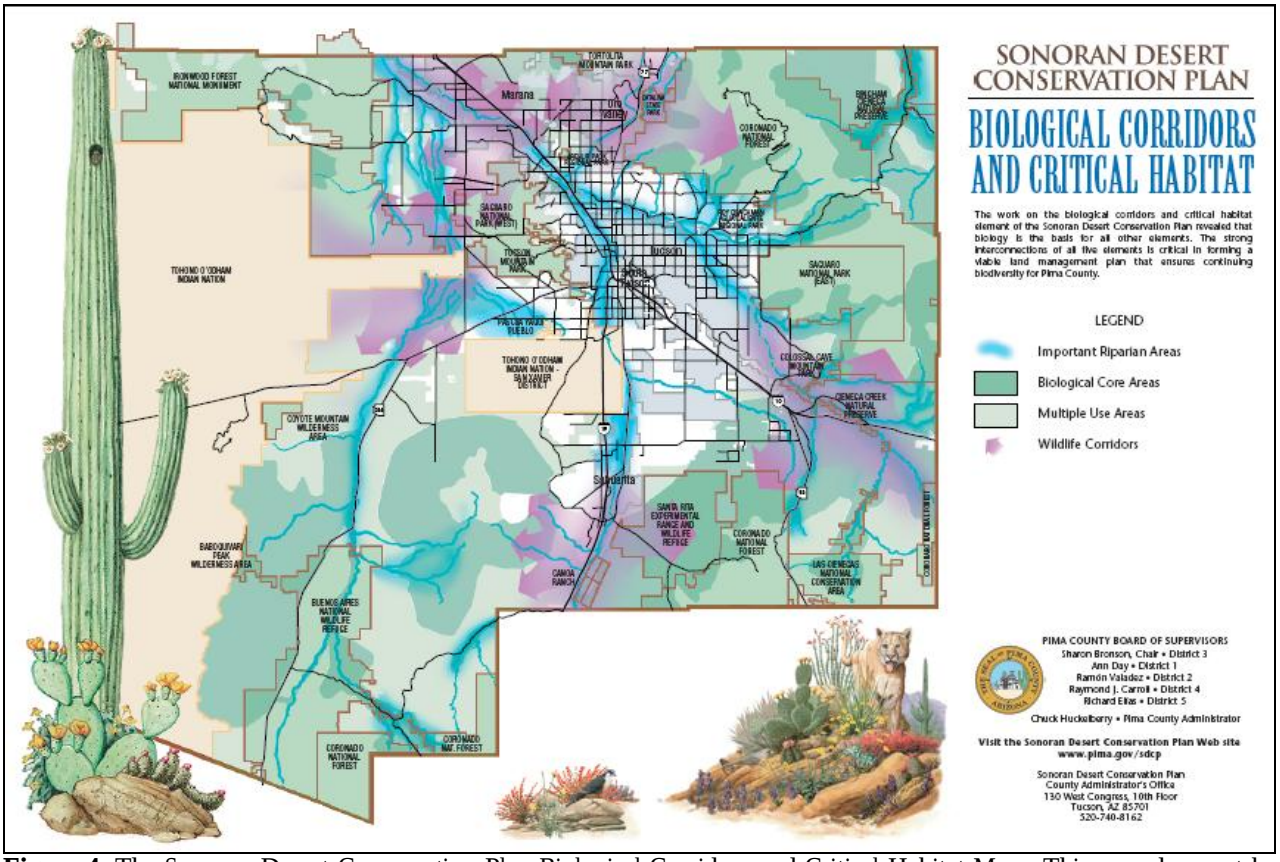

Figure 4. The Sonoran Desert Conservation Plan Biological Corridors and Critical Habitat Map. This map does not have proposed the bypass segments shown (see Figure 4). Even a cursory comparison reveals numerous (and very problematic) conflicts with proposed bypass segments. Note the location of identified wildlife corridors in relation to proposed routes.

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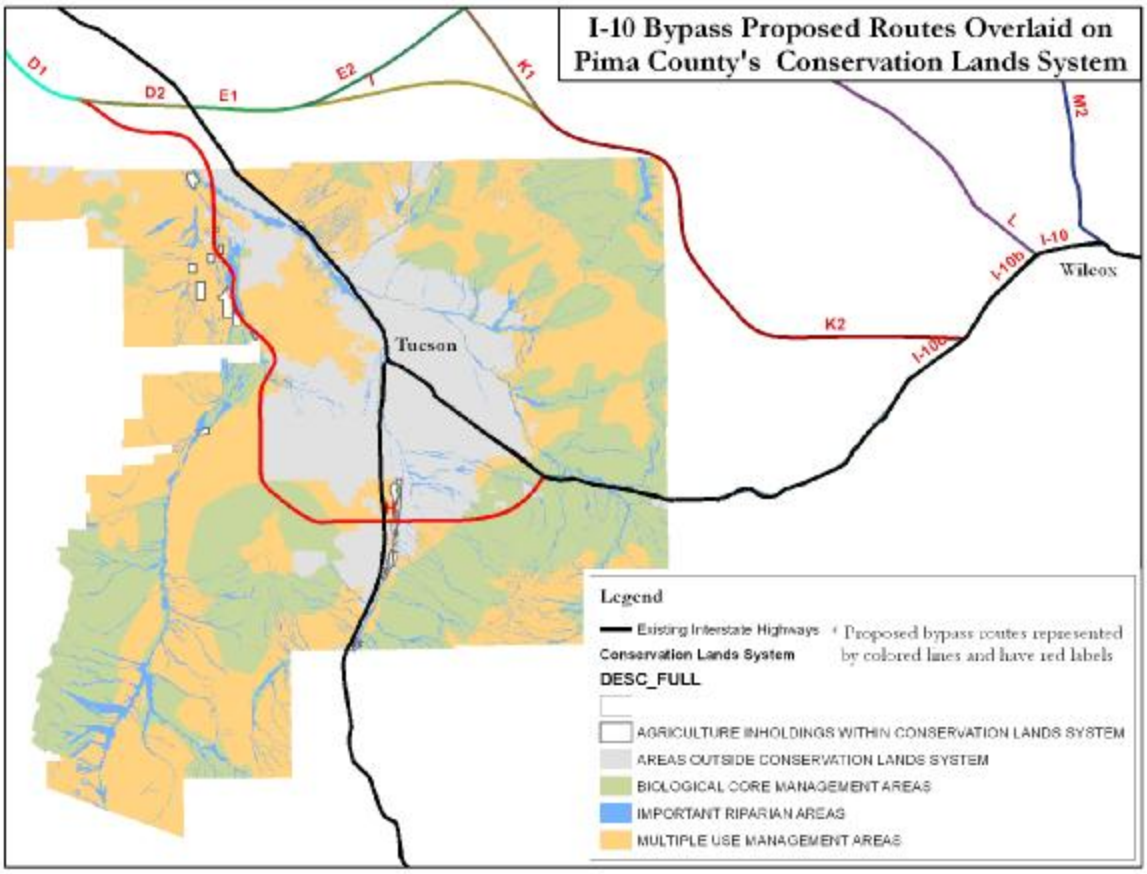

Figure 5. Biological Core areas and important riparian areas in Pima County's Conservation Lands System would be negatively impacted by proposed segment H, and would encourage growth south of Tucson that would further impact the integrity of important, intact habitats.

Public Opinion

The public has demonstrated significant engagement in the public discourse on this issue, and has roundly opposed the bypass concept. At the public meeting in Tucson, of 40 people who spoke, only one land speculator was in favor of a bypass. Similarly, at the most recent ADOT board meeting on December 21st in Oro Valley, there was standing-room-only because of the large crowd that came to speak out against the bypass concept. In fact, there were so many people who desired to speak against this proposal that the vast majority of them were denied the opportunity to speak due to time constraints. This demonstrates the broad and united opposition to the bypass proposal. Any efforts to further this proposal will be met with stiff opposition from affected citizen groups, public interest groups and environmental organizations.

Both Cochise County and Pima County have passed resolutions opposing the I-10 bypass (see addendums). The Cochise County resolution opposes the San Pedro Valley route, while the Pima County resolution opposes all of the proposed routes on many of the same grounds expressed in these

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comments. The Pima County resolution states that the county "Opposes the construction of any new highways in or around the County that have the stated purpose of bypassing the existing Interstate 10 as it is believed that the environmental, historic, archeological, and urban form impacts could not be adequately mitigated". This statement is at the heart of the issue: **the impact of a bypass as proposed could not adequately be mitigated.**

Summary

The bypass concept is a wrong turn for Arizona. It will not effectively address the perceived problems. It will only create more problems for Arizona's communities, municipalities, treasured places and diverse wildlife. We can do better, by implementing less harmful, multi-modal and more sustainable prospects that have the potential to effectively address our transportation challenges without compromising the integrity of our priceless natural heritage and signature rural landscapes. We urge the Arizona Transportation Board to listen to the vast majority of the public sentiment and heed the call to bypass the bypass concept in favor of pursuing more attractive, efficient and palatable solutions.

Sincerely,

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Southwest Representative
Defenders of Wildlife

Trisha White
Director, Habitat & Highways Campaign
Defenders of Wildlife

Jesse Feinberg
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