Greater Edwards Aquifer Alliance

Member Organizations

Alamo Group of the Sierra Club
Aquifer Guardians in Urban Areas
Austin Regional Sierra Club
Bexar Audubon Society
Bexar Green Party
Castroville Smart Growth Coalition
Cibolo Nature Center
Environmental Stewardship Committees of the Episcopal Church of Reconciliation & Episcopal Diocese of West Texas
Environment Texas
First Universalist Unitarian Church of San Antonio
Friends of Canyon Lake
Fuerza Unida
Government Canyon Natural History Association
Hays Community Action Network
Helotes Heritage Association
Hill Country Planning Association
Guardians of Lick Creek
Kendall County Well Owners Association
Kinney County Ground Zero
Medina County Environmental Action Association
Northwest Interstate Coalition of Neighborhoods
Preserve Our Water-Blanco County
San Antonio Conservation Society
San Geronimo Valley Alliance
San Geronimo Watershed Alliance
San Marcos Greenbelt Alliance
San Marcos River Foundation
Santuario Sisterfarm
Save Barton Creek Association
Save Our Springs Alliance
Scenic Loop/Boerne Stage Alliance
Sisters of the Divine Providence
Smart Growth San Antonio
SEED Coalition
Texas Water Alliance
Travis County Green Party
West Texas Springs Alliance
Wildlife Rescue
Wimberley Valley Watershed Association

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July 17, 2007

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Via Email and Fax

Re: Comments on Loop 1604 (from SH 151 to IH 10E) Toll Project Environmental Assessment

On behalf of the Greater Edwards Aquifer Alliance (GEAA), and its individual member, Save Our Springs Alliance (SOSA), thank you for the opportunity to comment on the Environmental Assessment (EA) for the Loop 1604 Toll Project. GEAA and SOSA are non-profit environmental advocacy groups dedicated to the protection of the Edwards Aquifer, its hill country watersheds and its ecosystems.

The National Environmental Policy Act (NEPA) requires the preparation of an Environmental Impact Statement (EIS) for every major federal action "significantly affecting the quality of the human environment."[1] In analyzing the significance of federal action, particular attention should be paid to the "context" and "intensity" of the proposed project.[2]

Disregarding and downplaying the context and intensity of the Loop 1604 project, the EA inappropriately concludes that there will be no significant environmental impacts from the proposed 36.4 mile, $1.77 billion major highway expansion adding 247 acres of impervious cover in one of the most environmentally sensitive areas in the State of Texas—the Edwards Aquifer recharge zone. It defies common sense for TxDOT to recommend a finding of no significant impact (FONSI) in lieu of a full EIS. It also defies federal and state regulations that require an EIS be prepared where it is "*likely*" that an action has "a significant impact on the environment."[3]

[1] 42 U.S.C. § 4332(2)(C).
[2] See 40 C.F.R. § 1508.27.
[3] 23 C.F.R. § 771.119(i); 43 Tex. Admin. Code §§ 2.42, 2.43.

The Edwards Aquifer recharge zone, the context of the Loop 1604 project, is the most ecologically sensitive area of Texas.[4] It is home to multiple endangered species, and overlies the federally designated sole source drinking water aquifer that provides water to over 1 million people. The area currently technically fails to achieve EPA's 8-hour ozone standard in large part due to the increased traffic the proposed improvements are intended to address. San Antonio is also one of the fastest growing cities in the nation. That growth is especially intense along the Loop 1604 corridor to the North, which overlies the Edwards Aquifer Recharge Zone and is located in a flood-prone area that is rapidly losing its rural nature and character. As such, even "slight" impacts rank as intense.[5]

We ask only that FHWA and TxDOT do what the law requires them to do, and what they have already recognized they must do in similar situations:[6] initiate a process whereby an EIS is developed. Only through NEPA's EIS process can a full and complete understanding of the impacts associated with roadway improvements along the Loop 1604 corridor be developed so that the public can make an informed choice about such improvements. We believe, based on the record, that the minimal threshold necessary for developing an EIS is cleared by a long shot. Based on this record, it would be arbitrary and capricious to determine that there is no likely significant environmental impact.

The EA is Legally Deficient in Several Areas

The "need and purpose" section of the EA makes a great deal out of the necessity of improving safety. Yet the EA fails to assess how this will happen, or even if it will happen. It only takes it for granted. Often, increasing drive speeds and increasing road capacity increases traffic fatalities (and increases the risk, frequency, and severity of spills of toxic materials). An analysis of alternatives would look at alternative designs that can address the safety purposes of the proposed project. The EA contains no discussion of alternatives for safety, instead focusing on the other two purposes—mobility/operation, and expeditious delivery.

These other two purposes of mobility and expeditious delivery unreasonably narrow the alternatives to the toll road project that was ultimately studied.[7] Moreover, short shrift is

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[4] Texas Water Development Board, *Aquifers of Texas* 14 (Nov. 1995) ("The aquifer feeds several well-known recreational springs and underlies some of the most environmentally sensitive areas in the state."); Edwards Plateau Ecoregional Planning Team, The Nature Conservancy, *A Biodiversity and Conservation Assessment of the Edwards Plateau Ecoregion* 1-2 (2004) ("The Edwards Pl even from a global perspective. . . . It is this varied ecological setting that makes the Edwards Plateau one of the most diverse biological regions in the world.").

[5] 40 C.F.R. § 1508.27(b)(3), (4), (5), (6), (7), (9).

[6] For instance, TxDOT has developed an environmental impact statement for the Trans Texas Corridor in part because the Edwards Aquifer recharge and contributing zones are environmentally sensitive. Texas Dept. of Transportation, *TTC-35 Tier One Draft EIS* 9 (FHWA-TX-EIS-05-01-D Apr. 2006).

[7] *Simmons v. United States Army Corps of Eng'rs*, 120 F.3d 664, 666-67 (7th 1997); *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 196 (D.C. Cir. 1991) ("Yet an agency may not define the objectives of its action in terms so unreasonably narrow that only one alternative from among the environmentally benign ones in the agency's power would accomplish the goals of the agency's action . ."); *Davis v. Mineta*, 302 F.3d 1104, 1119-20 (10th Cir. 2002) ("if the purposes and needs of the Project were

given to the alternatives that are rejected for study. Preliminary alternative 6 concludes: "Mass transit accounts for a relatively low percentage of trips and this trend is assumed to continue into the future." Rather than evaluating alternatives cumulatively to address the congestion problem (e.g. mass transit in conjunction with TSM), the EA rules out each option one by one, only choosing for study a toll plan vs. a no-build scenario.[8] Thus, it would be arbitrary and capricious to approve this EA, where the alternatives have not been reasonably and adequately defined and analyzed.

The cursory treatment of alternatives underscores the need for a full EIS, where reasonable alternatives could be explored in greater detail and design choices compared and vetted. The EA only presents a build vs. no build scenario, which is unacceptable for a project of this magnitude and nature. There is little or no discussion on how features such as new interchanges and frontage roads (or a combination of tolled and non-tolled lanes) can affect noise and induced growth in the immediate area—and no point of reference (i.e. a reasonable alternative) for comparison. Elevated highway features such as direct connectors are known to sharply increase noise levels in the environment,[9] producing harmful noise impacts to residents in the vicinity. Highway agencies must often implement costly abatement measures, such as noise barriers, to mitigate the impacts. An EIS would better explore these issues through comprehensive analyses (e.g. traffic noise analyses, growth projections based on different models) and the presentation of alternatives that takes these significant impacts into consideration from the start, rather than seek to mitigate them after the fact.

Because of inadequate detail and a lack of alternatives, the EA is also deficient with respect to the impacts of tolling and induced growth. State law requires that there be as many or more free lanes when lanes are to be tolled. This causes TxDOT to continue to design frontage road systems when, in fact, since 2001 TxDOT's policy has been to not build new frontage roads. But there are alternatives to frontage roads or tolled/non-tolled lane systems, such as designing limited access parkways with smaller footprints while buying up access rights of adjoining property owners. These systems can move traffic while producing less environmental impacts. This is never considered in the EA, and neither are alternatives to tolling. Because there are no alternatives, there is also no way to measure and compare the impacts on induced growth that different design choices would produce.

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so narrowly construed as to mandate the extra capacity only at 11400 South, we would conclude that such a narrow definition would be contrary to the mandates of NEPA").

[8] *See Davis v. Mineta*, 302 F.3d at 1121-22 (finding EA inadequately treated alternatives): "The EA/4(f) rejected these options because, standing alone, they would not meet the purpose and need of the Project. However, no effort was made to consider TSM and mass transit *together* and/or in conjunction with alternative road expansion as a means of meeting Project goals. This represents one of the most egregious shortfalls of the EA."

[9] Recent studies have shown that the elevation of highway systems dramatically increases the noise levels in surrounding areas. M. Hadi Baaj et al., "Modeling Noise at Elevated Highways in Urban Areas," 127 Journal of Urban Planning and Development 169-80 (2001). This study analyzed a 12 lane highway similar to TxDOT's US 290/SH 71 proposal and used FHWA's Traffic Noise model and noise abatement standards.

Toll roads can only succeed when there are significant speed differences between the toll road and any free alternative. Heavy debt-financing for massive projects such as this one augments the incentive to make the toll lanes create revenue while letting the free lanes become congested. Congestion on free lanes of the Loop 1604 project would defeat the project's purpose and add additional significant environmental impacts magnified by the increased capacity. It would also spur additional, and frequently undesirable, growth on the sides of the highway. Tolling also creates significant environmental justice issues because the low income and minority populations are disproportionately affected by tolls and denied access to public facilities and the benefits of federal funding.

On the environment, the bulk of the EA is simply a compilation of background environmental information for the area surrounding Loop 1604 in northern Bexar County. To the extent there is "assessment," it is minimal, conclusory, and largely unfounded. The assessment is also on a very general "concept" scale. It does not define the project specifically. The EA recommends a finding of no significant impact with no discussion of the volumes of earth to be blasted, dug, moved, and graded in this highly fractious karst region. For example, cubic meters of earth to be cut and filled, where these cuts and fills are located, the amount of gravel, cement, an other quarried materials will be required and where these materials will come from and what the effects there will be from the quarrying activities and the delivery of such materials to the project site.

There are many quarries in and around the project area, and yet quarries typically are subject to little regulation by the TCEQ. Unregulated mining of aquifer limestone, pollution and pumping of groundwater, effects on the wells of adjacent landowners, and added dust and traffic impacts from infrastructure and vehicles, are issues that go largely unaddressed under the current regulatory scheme, which only provides for storm water discharge permits and air quality permits. An EIS would better address these significant environmental impacts than the EA.

Direct, indirect, and cumulative impacts of the project on air quality are also insufficiently analyzed. The San Antonio area is currently in non-attainment under the Federal 8-hour ozone National Ambient Air Quality Standards (NAAQS). The EA suggests that mobility will improve the air quality—but this assumption is undermined by the massive capacity-increase, construction activity (fugitive dust), congestion along frontage roads or non-tolled lanes, and induced growth that the Loop 1604 project will cause. An EIS would provide the opportunity for more comprehensive air quality modeling and consideration of these significant impacts.

The EA says nothing about increased flooding downstream resulting from the preferred alternative. The direct effects of adding 247 acres of impervious cover to the Edwards Aquifer's recharge and contributing zone acres will substantially increase peak runoff stormwater discharge rates, greater runoff volumes, and higher floodplain elevations. It has been demonstrated that land-use practices alone can increase Central Texas peak-flood discharges by as much as 300 percent.[10] Given that the area is already prone to

[10] S. Christopher Caran and Victor R. Baker, *Flooding Along the Balcones Escarpment, Central Texas, in* The Balcones Escarpment, Central Texas, 1-14 (Patrick L. Abbott and C.M. Woodruff, Jr., eds., 1986).

flash floods, this is a significant effect. Devastating flooding in 1998, 2002, and 2007 in the San Antonio area bears witness to why the National Weather Service nicknames the area "Flash Flood Alley."[11] The area's thin soils, large areas of exposed bedrock, and relatively sparse vegetation contribute to produce rapid runoff.[12]

Both direct and indirect effects are inaccurately minimized by downplaying the fact that the project crosses the recharge zone, and, instead, looks feature, by feature, concluding (without description or analysis) that each feature is insignificant in its own right, never bothering to recognize that since there are many dozens of caves, faults and sinkholes that were found, and that the EA recognizes that many more are likely to be encountered during construction, it is impossible to conclude anything other than significant effects will occur.

The addition of 247 acres of pavement (plus the induced pavement of additional growth along the corridor, including new gas stations, new restaurants, new homes, etc) will also, necessarily, reduce recharge. Since recharge to the overallocated Edwards Aquifer is essential to the life support for the entire Edwards region, losing this recharge cannot be considered insignificant, nor can it be rendered so by simply broadening the scope to the entire region.

The EA improperly dismisses the potential for the project, directly, indirectly and cumulatively from causing further impairment to the impaired waters segments of Salado Creek, Lower Leon Creek, and Mid-Cibolo Creek downstream of the project. Increasing pollutant levels in this impaired stream from a regulated discharge is prohibited by the Clean Water Act. Given the scale of the project, the amount of impervious cover, and the number of vehicles that will use it (and drip oil and gasoline, spew exhaust, shed tire rubber and brake lining, drip anti-freeze, and dump litter) it is likely that significant impacts will result, causing further impairment in these sensitive streams.

The admitted bulldozing and paving over of 65 acres of oak/ashe juniper woodlands located in the ROW for Loop 1604 cannot be considered insignificant. The EA fails to state how many trees will be lost, how much carbon capture is lost from the loss of these trees, and how much additional erosion will result from losing this tree cover.

Nor can it be ignored that, in addition to destruction of natural habitat of the endangered golden-cheeked warbler, the Loop 1604 project proposes to destroy 2.5 acres of critical habitat for the endangered karst invertebrate species located in future ROW. The ROW for Loop 1604 is located only 98 feet from the cave entrance for this CHU. In light of this fact, the harm to karst invertebrates will be extensive. The biological assessment that is being prepared does not obviate the need for a full EIS. It is hard to see why the direct and indirect effects to multiple endangered species do not add up to a significant impact on the environment.

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[11] *See* Nat'l Weather Service, Public Information Statement (Mar. 23, 2006), *at* http://www.srh.noaa.gov/ewx/html/floodaware/ffloodday4.htm.

[12] Todd H. Votteler, *When It Rains, It Pours*, *at* http://www.edwardsaquifer.net/pdf/flood.pdf.

The fact that TxDOT must comply with TCEQ's "Edwards Rules" does not support a finding of NSI, but rather makes it clear that such a finding is inappropriate. The Edwards Rules exist in recognition of the importance of protecting the Aquifer and of its vulnerability to pollution and loss of recharge as a result of development. The EA explains that a "Geological Assessment" will have to be prepared, and a WPAP developed. EA 139. Future assessments, and future, undescribed mitigation plans, cannot in anyway support a finding of NSI at this time.

In this same section, the EA argues that the "potential for significant impacts" exist "only if a major karst or other zones of fractured, high-porosity rock were unearthed during construction." EA 140. The entire course of the project crossing the recharge zone is crossing the type of rock described. Thus, it is clear that significant impacts will result from the project.

The EA states that the build alternative would require the design, construction, and operation of permanent storm water quality controls. EA 146. Again, this requirement underscores the need for a full EIS. The "required" controls are not described, located on a map, or shown by design. Such controls themselves—for a project of the scale proposed—will necessarily require significant construction activities. These facilities are sufficiently extensive that they should be shown and the environmental effects of constructing and operating these facilities should be included in an EIS. If the facilities are only token, and not extensive, then there is no way they can deliver the water quality protection that the EA suggests.

TxDOT itself has funded studies demonstrating that many of these types of water quality controls provided only limited benefit, especially for certain pollutants (PAHs, dissolved constituents). These studies include those done by Dr. Michael Barrett on Mopac/Loop 1 in Austin.

In light of current science, TxDOT must include an "effects on global warming" assessment for projects of this scale ($350,000,000 or more cost), which would look at emissions of global greenhouse gases from both construction and operation of the facility (with operation to include emissions from vehicle travel made possible by the expanded capacity).

I. Direct Effects

a. Impacts to Recharge Features and Aquifer Capacity

The Environmental Assessment asserts that paving 247 acres at 100% impervious cover "would have insignificant impacts on the quantity of water feeding the groundwater formations, both during and after construction." EA 136. Yet, as pointed out in the water quality section, the EA proposes to destroy 95 karst features, 55 of which are deemed sensitive by the TCEQ, and 3 which are deemed significant by the TCEQ because having catchments greater than 1.6 acres. EA 140. There is no support or explanation in the EA for why the sealing or removal of 3 significant karst features in the ROW is not a

significant impact; why the sealing or removal of 55 sensitive features is not a significant impact; and why the sealing or removal of 95 recharge features altogether would not add up to a significant impact.

The EA demonstrates its arbitrary and illogical reasoning by stating beforehand that "due to the relatively insubstantial size of surface drainage area leading to karst features within and adjacent to the ROW, direct effects to the Edwards Aquifer from reduction of recharge capacity are unlikely to measurably affect aquifer storage." EA 137. When the issue of the 3 significant recharge features with substantial drainage areas comes up a few pages later, in the water quality section, the impact is simply disregarded.

Moreover, the EA does nothing to support or explain what it means by "measurably affect[ing]" aquifer storage. The EA states that a TCEQ survey was performed, which, as previously noted, identified the 3 significant recharge features that the EA goes on to ignore. But there is no reference to a study report or the factors used to determine what a "measurable" effect would be. There are several accepted methodologies for performing geologic assessments of recharge features (e.g. dye tracing studies), including those promoted by the American Society for Testing and Materials Standards and the Environmental Protection Agency. There are also less reliable methods generally used by the State of Texas, such as the survey mentioned in this EA, that are in contrast to nationally and internationally accepted standards. The lesser methods are based solely on looking at a possible recharge feature and using geological experience and untested criteria to determine the feature's potential hydrological significance. Peer reviewed studies have shown that the geologic assessment method required by the State is only 33.75 accurate and underestimates the "significance" of 57.1% of karst features.[13]

Increased impervious cover and urbanization cause water that would otherwise infiltrate into the Aquifer to runoff and bypass the aquifer instead. With the supply of water in the Edwards Aquifer already being pushed to its limits by increasing population, reducing the recharge into the Aquifer will have wide-scale ramifications.

The EA states that it is difficult to estimate the amount of recharge that will be lost or gained due to the non-homogenous nature of karst limestone. EA 137. However, the burden in on TxDOT to ensure that the Loop 1604 project will not result in significant impacts to recharge. This, TxDOT has failed to show—in fact, the record instead shows that significant impacts are likely to result. The cursory, inadequate and conclusory treatment of the many karst features that will be destroyed with this project underscores the need for an EIS. Geologic assessments to be performed in the future will be of no avail in the current task of assessing significant impacts.

[13] Veni, George. 1999. A Geomorphological Strategy for Conducing Environmental Impact Assessments in Karst Areas. Geomorphology, 31: 151-180.

b. Impacts to Groundwater and Surface Water Quality

Since 1975, the San Antonio segment of the Edwards Aquifer has been designated as the principal source of drinking water for San Antonio and the surrounding areas.[14] That means that, currently, the Edwards is the sole drinking water supply for over one million people.[15]

In designating the Edwards as a sole-source aquifer, the EPA administrator noted that the Edwards "is vulnerable to contamination through its recharge zone, particularly from streams crossing the zone."[16] Since contamination of a ground water aquifer is difficult or impossible to reverse, the Administrator found that "contamination of the Edwards Underground Reservoir would pose a significant hazard to those people dependent on the reservoir for drinking purposes."[17]

Unfortunately, urban development has already impacted water quality in the aquifer. For instance, leaks and spills have already contaminated drinking water wells in the past.[18] One assessment of water quality throughout the San Antonio region of the Edwards Aquifer found 28 human-made volatile organic compounds in samples from 89 different wells.[19] These VOCs included carcinogenic benzene and toluene. The assessment concluded that the VOC detections were "associated with urban development" and that there exists a greater potential for VOC contamination because of increasing development in the aquifer recharge zone.[20]

The lack of any central distribution facility makes treatment for any contamination especially cost-ineffective. As such, the best protection for San Antonio's drinking water supply is prevention. For that reason, San Antonio voters have twice in the past six years approved 1/8-cent sales tax increases to pay for and permanently preserve land over the recharge zone. Open space preserves both the quantity and quality of water.

In addition to the inadequate discussion of water quantity impacts that will be caused by alteration of karst features (discussed above), the EA for Loop 1604 inadequately discusses water quality impacts across the board. The EA consistently relies on presenting the bare minimum of mitigation measures without demonstrating how the mitigation measures will actually work to render impacts insignificant.

"The Build Alternative would have the potential for significant impacts only if a major karst or other zones of fractured, high porosity rock were unearthed during construction and not sufficiently protected. After construction is over, both karst and high-porosity

[14] 40 Fed. Reg. 58,344 (Dec. 16, 1975).
[15] According to the 2000 Census, over 1.14 million people resided in San Antonio alone.
[16] 40 Fed. Reg. 58,344 (Dec. 16, 1975).
[17] *Id*.
[18] Rudolph Bush, *Gas Spill Fouls Third Trinity Aquifer Well*, San Antonio Express-News, 8/4/1999, at 3B.
[19] Patricia B. Ging, Linda J. Judd, & Kirby H. Wynn, *Water-Quality Assessment of South-Central Texas—Occurrence and Distribution of Volatile Organic Compounds in Surface Water and Ground Water, 1983-94, and Implications for Future Monitoring*, United States Geological Survey, Water-Resources Investigations Report 97-4028, at 12 (1997).
[20] *Id*. at 16.

rock features would be protected, and the potential for only minor impacts would exist." EA 140. The "protection" that would be provided are compliance with the TCEQ Edwards Rules Water Pollution Abatement Plan. EA 142.

"TxDOT would have no control over the disposition of off-site features. Indeed, it is anticipated that off-site features do exist in the general project area." EA 141. "With regard to the Build Alternative, drainage ways and features located off-site would be protected from drainage originating on and subsequently running off of the site during the construction phase and post-construction phase of the project. TxDOT would prepare a WPAP detailing the protection methods to be used and it would be submitted to the TCEQ, EPA, EAA and other agencies for their review and comment prior to construction."

"The TCEQ's Edwards Rules requires the construction and maintenance of permanent water quality treatment controls (such as filter strips, sand filters, or detention water treatment systems) to the remove suspended solids from runoff, after construction, for the life of the roadway. This requirement would be applicable to both EARZ and the EACZ for this project." EA 144. "The Edwards Rules specify that permanent controls must insure removal of 80% of project-related runoff (total suspended solids-TSS) which exceeds pre-project conditions." Id. In consideration of these TCEQ regulatory controls, the project would be expected to have only a minor potential effect on the quality of groundwater." EA 145. Overall, this assessment indicates that the project has the potential for minor reasonably foreseeable effects on groundwater quantity and quality." EA 147.

The EA identifies three stream segments that have been listed as TMDL impaired streams under section 303(d) of the Clean Water Act. EA 157. There is no analysis of how these streams will not be further degraded by the proposed project and only a determination that utilization of TCEQ BMPs will protect these streams. "TCEQ 401 certification regulations, BMP guidelines and Edwards Aquifer protection requirements (in those sections of the project located over the recharge zone), which require an approved WPAP that incorporates both temporary and permanent BMPs are designed to assure that unacceptable impacts to water quality are avoided. These measures include, but are not limited to, silt fences, check dams (porous, non-erodible, rock structures placed along the drainage path to absorb energy, reduce erosion, and trap sediment), vegetative swales and filter strips, and detention basins." EA at 161-62.

With respect to mitigation measures, a "perfunctory description" or a "mere listing" of mitigation measures without supporting analytical data is insufficient to support a finding of no significant impact.[21] As such, simply relying on existing regulations or construction and stormwater permits intended to protect the aquifer is not enough barring a more detailed description of the actual steps to be taken under those regulations and permits. Under 5th Circuit precedent, TxDOT must demonstrate, through substantial

[21] *National Parks & Conservation Ass'n v. Babbitt*, 241 F.3d 722, 734 (9th Cir. 2001).

evidence that those measures *will in fact* reduce the impacts.[22] Absent such evidence, concluding that all substantial impacts are mitigated to a level of insignificance is not only impermissibly conclusory, it is also arbitrary and capricious.[23] As the Ninth Circuit stated, "where significant environmental damage may occur to a treasured natural resource, the studies must be conducted first, not afterwards."[24]

Evidence of the effectiveness of various regulations and permits to protect the Edwards Aquifer will be hard for TxDOT to come by given the growing literature regarding the failure of these regulatory devices. One study regarding the effectiveness of BMPs to control pollution emanating from road construction projects found "even an extensive system of temporary controls is not adequate to prevent large amounts of suspended sediment from entering receiving waters [during construction]."[25] Studies and practical experience reveal that filters get almost immediately clogged such that all subsequent runoff and pollution bypasses the control.[26] Hazardous material traps similarly "cannot function as a hazardous materials collection basin during runoff events when the roads are wet and the chance for an accident is higher."[27] TCEQ itself even recognizes that these hazardous material traps are ineffective during rain events.[28] Even the efficiencies reported for various BMPs are "overestimated compared to the actual particle removal efficiencies observed in the field" such that any cursory reliance on the reported efficiencies is arbitrary.[29]

Some BMPs are just flat-out ineffective. One study demonstrated that the *median* removal of sediment in runoff from highway construction was 0%.[30] Other BMPs might be effective, but only for certain kinds of pollutants.[31] Even the most effective BMP is all too often "compromised by inadequate installation and maintenance."[32] One study revealed that up to 55% of TCEQ's required BMPs to control pollution from construction and development do not work properly. To simply conclude, then, that BMPs will be

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[22] *O'Reilly v. United States Army Corps of Eng'rs*, 2004 WL 179451, at *4-5 (E.D. La. 2004) (affirmed by the 5th Circuit at 477 F.3fd 225 (2007)); *Western Land Exchange Project v. United States Bureau of Land Management*, 315 F. Supp. 2d 1068, 1091-92 (D. Nev. 2004).
[23] *O'Reilly*, 2004 WL 179451, at *5; *Western Land Exchange*, 315 F. Supp. 2d at 1092; *Wyoming Outdoor Council v. United States Army Corps of Engineers*, 351 F. Supp. 2d 1232, 1251-52 (D. Wyo. 2005).
[24] *National Parks & Conservation Ass'n v. Babbitt*, 241 F.3d 722, 736 (9th Cir. 2001).
[25] Michael E. Barrett, et al., *Technical Report CRWR 266—Water Quality and Quantity Impacts of Highway Construction and Operation: Summary and Conclusions* 33 (Center for Research in Water Resources, Nov. 1995).
[26] Sean Tenny, et al., *An Evaluation of Highway Runoff Filtration Systems (CRWR Technical Report 265)* 67 (Center for Research in Water Resources, Sept. 1995).
[27] *Id*.
[28] TCEQ, *Optional Enhanced Measures for the Protection of Water Quality in the Edwards Aquifer, An Appendix to RG-348*, at 18 (Feb. 2005) ("as long as a hazardous material spill does not occur during a rain event the system should contain the spill").
[29] Ana Marie Karmalegos, et al., *Particle Size Distribution of Highway Runoff and Modification Through Stormwater Treatment (CRWR Online Report 05-10)* 57 (Center for Research in Water Resources, Dec. 2005).
[30] Michael E. Barrett, *An Evaluation of the Use and Effectiveness of Temporary Sediment Controls (CRWR Online Report 95-6)* 53 (Center for Research in Water Resources Aug. 1995).
[31] Karmalegos, *supra* note 29, at 13-16, 57.
[32] Barrett, *supra* note 25, at 33.

applied to reduce any impacts to a level below significance is specious absent greater study.

With regards to other rules and regulations, nothing is mentioned of the shortcomings of the Edwards Rules and their failure to protect the Aquifer from increased pollution runoff from roadways and other facilities. Also no mention is made of the virtually non-existent enforcement and monitoring of the Edwards Rules by TCEQ. An honest assessment would include this information.

The Edwards Rules are widely recognized as being inadequate because they do not limit impervious cover or prohibit activities and land uses that threaten the aquifer.[33] For instance, there are no regulations regarding the siting of dry cleaners or other facilities that use hazardous materials. Consequently, spills and leaks will occur and will contaminate the aquifer; this has already happened several times in the San Antonio Region.

TCEQ has also permitted many projects with 90-100% impervious cover all while it is widely recognized that as little as 30% impervious cover severely impacts water quality such that streams become unable to support aquatic life.[34] Indeed, when it comes to the environment and especially endangered species, it does not matter that engineered water quality measures address 80% of the pollutant load given that the remaining load is sufficient, especially when aggregated across a watershed, to adversely impact the environment.[35]

Local ordinances do not function to fill the gaps of the TCEQ Rules because these regulations are often incompetent against grandfathering claims.[36] Indeed, if the sum total of all existing regulatory mechanisms were adequate to protect the sensitive nature of the Edwards Aquifer and recharge zones, the United States Fish & Wildlife Service would not have needed to list any of the region's endangered species.[37]

Overall, then, it would be arbitrary and capricious for TxDOT to rely on rules and regulations promulgated to "protect" the Edwards aquifer given that the evidence demonstrates that the rules are hardly protective. In order to be able to rely on mitigation to reduce the level of impact to less than significant, TxDOT must provide substantial evidence that reliance on various water quality permits and regulations is justified.[38] In other words, TxDOT must prepare an EIS.

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[33] Christopher Anderson and Jerry Needham, *S.A. Panel Blasts TCEQ on Aquifer*, San Antonio Express-News, 1/21/2004.

[34] The Texas Supreme Court has recognized that impervious cover limits are a nationally-recognized method of preserving water quality. *Quick v. City of Austin*, 7 S.W.3d 109, 119 (Tex. 1998).

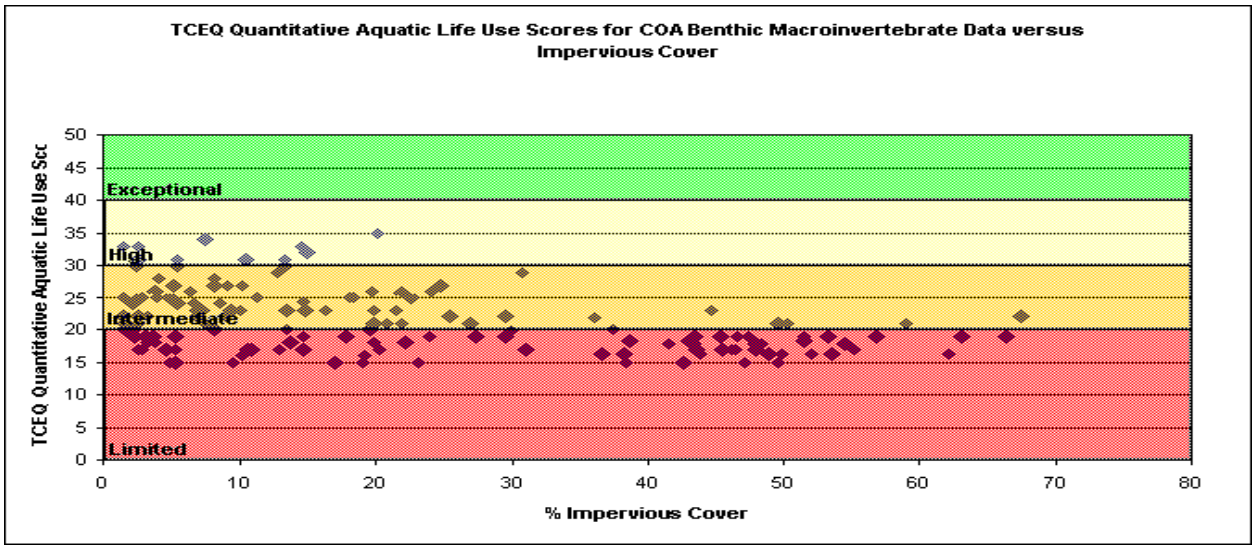
[35] Email from Robert Pine, USFWS to Michael Barrett, University of Texas, of 1/31/2005, at 1 ("If a BMP removes 80% of TSS and still discharges stormwater with adverse effects, there is the real likelihood of take of [endangered species].)

[36] John Tedesco, *Avoiding Rules They Wrote*, San Antonio Express News (Oct. 18, 2005).

[37] *See* 50 C.F.R. § 424.11(c)(4) (listing the "inadequacy of existing regulatory mechanisms" as a factor in a decision to list a species as endangered).

[38] *National Parks & Conservation Ass'n v. Babbitt*, 241 F.3d 722, 736 (9th Cir. 2001).

Additionally, the EA fails to take into account the effects of the most important water quality control of all, impervious cover restrictions. "Rainfall runoff rates would increase slightly due to an increase in impervious cover, but those increased runoff rates will not make a measurable impact on surface waters." EA 161. Impervious cover causes polluted runoff to enter the Aquifer. TCEQ data shows that water quality is degraded at impervious cover levels as low as 20%—the Loop 1604 project proposes 100% impervious cover over 247 acres. (See chart below).



Other studies have shown that impervious cover levels as low as 10 to 15% can induce adverse and irreversible changes in the quality of streams.[39] The effects stem from changes in the hydrology, water quality, habitat structure, and biodiversity of the aquatic system.[40] Monitoring studies indicate that urban contaminant loads are directly related to the amount of impervious cover in the watershed.[41] In most models, impervious cover is the key predictive variable used to estimate contaminant loads.[42] Once the level of impervious cover exceeds about 25%, many streams become "non-supporting" and are characterized by fair to poor water quality, highly unstable channels, and poor biodiversity.[43] Because streams flowing across the recharge and contributing zone resupply the Edwards Aquifer, high water quality in these streams is a major concern.

Despite the wealth of scientific evidence on the effects of impervious cover on water quality and the ineffectiveness of the Edwards Rules and BMPs, TxDOT finds no significant impacts from the Loop 1604 project. Moreover, TxDOT reaches its

[39] Protecting the Edwards Aquifer: A Scientific Consensus, available at www.glenrose.com (citing Veenhuis and Slade, 1990. Water-Resources Investigations Report 90-4107, U.S. Geological Survey). See website for list of signatories.
[40] Schueler, T. 1994. The importance of imperviousness. Watershed Protection Techniques 1: 100-111; 1995. Site Planning for Urban Stream Protection. Center for Watershed Protection.; 1996. Crafting Better Urban Watershed Protection Plans. Watershed Protection Techniques 2: 329-337.
[41] Protecting the Edwards Aquifer: A Scientific Consensus, fn. 4.
[42] Id.
[43] Id.

conclusion without supporting how the mitigation measures it proposes will actually control pollution. An EIS should be prepared to adequately address these issues.

c. Direct Effects (and Indirect) on Endangered Species

The EA states that: "No potential or occupied golden-cheeked warbler habitat occurs within existing or proposed ROW within the proposed project limits. Thus, no direct impacts on goldencheeked warblers or their habitat would be expected to occur within existing or proposed ROW." EA 188.

Past and future highway construction has been identified as a specific threat to the endangered golden-cheeked warbler.[44] Roads destroy and fragment warbler habitat. In the case of the Loop 1604 project, adding a road to the area would inevitably result in fragmentation and loss of warbler habitat.

In 1990, United States Fish and Wildlife Service (FWS) placed the golden-cheeked warbler (*Dendroica chrysoparia*) on the endangered species list because of accelerated habitat loss in the species' limited breeding range and other threats (55 FR 53153).[45] The warbler's breeding range consists of mature Ashe juniper (*juniperus ashei*)-oak woodlands that grow along steep, moist canyons, as well as drier, upland areas within 26-38 counties in the Edward's Plateau, Lampasas Cut Plain, and Llano Uplift regions of Texas (USFWS 1992, Ladd and Gass 1999). For breeding, the warbler also requires closed canopies (≥ 50%), stands at least 10 ft high, stem densities from 140-776 stems/acre, and ready access to water and strips of bark from mature Ashe juniper (Wahl et al. 1990, USFWS 1996, Ladd and Gass 1999). Such restrictive requirements make the golden-cheeked warbler vulnerable to threats such as habitat loss and fragmentation. For instance, from 1962 to 1990, 35% (326,355 acres) of available warbler habitat was destroyed, and the rate of habitat loss has steadily increased because warbler habitat is commonly cleared for grazing and cedar products (Pulich 1976, Kroll 1980, Wahl et al. 1990, Campbell 1995).

Despite current conservation efforts, urbanization in the form of residential development and reservoir construction continues to threaten the warbler through the continued loss of juniper-oak woodland (USFWS 1996, Ladd and Gass 1999). Roads like Loop 1604 will foster urban growth and habitat fragmentation in outlying unincorporated areas that have no zoning controls to regulate such growth.

Such expansive road building, though, exhibits impacts beyond just habitat clearing. For instance, the injection of so many people and so many roads into warbler habitat increases the risk of wildfires. Noss (2006) reports that humans are suspected to cause at least 90% of wildfires in the United States, over half of which begin along roads. For instance, Noss (2006) reports that in one account, 78% of all anthropogenic fires occurred with 265 feet of a road; in another 75% of all forest fires were traced to roadsides. Such

[44] United States Dept. of Fish and Wildlife, *Endangered and Threatened Wildlife and Plants; Final Rule to List the Golden-cheeked Warbler as Endangered*, 55 Fed. Reg. 53,153, 53,157 (Dec. 27, 1990).
[45] Subsequently, in 1991, Texas Parks and Wildlife added the warbler to their endangered species list (Executive Order No. 91-001).

fires can be disastrous in warbler habitat, which is especially vulnerable to fire. Additionally, these roadways increase water pollution and air pollution that indirectly affect the warblers' chances of survival and recovery.

These impacts directly affect the species' survival and recovery. Magness et al. (2006) reported landscape composition exceeding 40% woodland as the single most important variable predicting golden-cheeked warbler occurrence, and although measures of habitat fragmentation were poor predictors of warbler occurrence in this study, others have reported low pairing success and productivity associated with fragmentation (Benson 1990, Engels and Sexton 1995, Moses 1996, Coldron 1998, Rappole et al. 2003). Close proximity to urban development and human disturbance has been associated with increased territory size and distance to edge, decreased patch occupancy, and increased nest predation due to predators from urban environments (Coldren 1998, Engels and Sexton 1995). Both Arnold et al. (1996) and Coldren (1998) found evidence that suggests there is a minimum patch size requirement for the golden-cheeked warbler, and Lindsay (2006) stressed the importance of adequate connectivity among golden-cheeked warbler populations to ensure sufficient gene flow.

Warbler habitat is often not identified until a road project or development is begun—in other words, when it is too late to plan responsibly with respect to this endangered species. Whether seen as a direct or indirect effect, the impacts to warbler habitat in the area of the Loop 1604 project should be studied in an EIS.

The EA is also deficient in its treatment of the karst invertebrates that will be impacted by this project. The EA finds that: "TxDOT does not anticipate that all of the possible or potential threats to karst invertebrates or potential habitat identified by the USFWS would occur." EA 188. Yet the project proposes to destroy 2.5 acres of Critical Habitat Unit 16 in the ROW.

In addition: "Existing ecological conditions would change as a result of the proposed project. Recent Biological Assessments involving karst invertebrates in Travis and Williamson County have used 164 feet as a measure of the likely foraging area required by crickets to maintain adequate nutrient input to the karst ecosystem and 492 feet as a more general ecological buffer for avoiding adverse impacts to cave biota. Since the ROW begins approximately 98 feet east of the cave entrance, road construction would directly affect both the core trogloxene foraging area and the ecological buffer." EA 189. These effects, whether seen as direct or indirect, are clearly significant, necessitating an EIS.

TxDOT is consulting with FWS to prepare a biological assessment. When the BA is finished: "TxDOT would implement appropriate conservation measures to minimize impacts." But the Loop 1604 project, having inadequately investigated the habitat of endangered species in its EA, should not be allowed to defer these considerations to a future time. Like its treatment of other karst-related topics in the EA, TxDOT makes excuses based on scientific uncertainty—yet the agency is required to demonstrate that no significant impacts will result and that its mitigation measures will actually work.

d. Direct Effects on Wildlife

"The construction of this project should have no greater affect on local wildlife populations than those that typically result from any other project of this nature." EA 177. This analysis fails to determine the significance of impacts to wildlife. Environmental Assessment of a project's impacts is not relative to other projects but to the conditions existing in the area of the proposed project. It is impossible to determine based on this analysis that there are no significant impacts to local wildlife.

II. Indirect Effects

a. Area of Effect

The Area of Effect for indirect effects in the EA is the geographic boundary that was defined by the "corridor influence area," as delineated by the Texas Transportation Institute (TTI) in the "Draft Loop 1604 Tolling Traffic Analysis Plan" dated October 31, 2006. The area "was based upon Traffic Analysis Zones (TAZs) within a two to five mile radius of the project corridor consistent with the estimate provided by the National Cooperative Highway Research Program (NCHRP). This reference states that 'development effects are most often found up to one mile around a freeway interchange, up to two to five miles along major feeder roadways to the interchange. The Area of Effect is comprised of 325,309 acres or 508 square miles and is located within portions of Bexar, Comal, and Guadalupe Counties.'" EA 11.

The indirect effects analysis falsely concludes no significant or substantial impacts for land use, water quality, vegetation, wildlife, threatened and endangered species, and air quality, because the Area of Effect excludes areas that will have the most significant impacts. This Area of Effect is woefully inadequate for this particular project that provides the major traffic conduit around San Antonio in the rural hill country lands that are being quickly urbanized, growth that will be greatly facilitated under the Build Alternative. The proposed project will facilitate commuting into San Antonio from as far away as Johnson City and Austin spurring sprawl exurban development that will affect water quality, vegetation, agricultural lands, wildlife, threatened and endangered species, and increase peak travel congestion. An appropriate Area of Effect would include greater portions of the counties surrounding Bexar. It would also include a greater portion of downstream areas that are likely to be impacted by the Loop 1604 project.

b. Indirect Effects to Water Quality

For groundwater, the EA finds that: "Indirect effects to the Edwards Aquifer Contributing, Recharge, and Transition Zones could occur from development under the Build and No Build Scenarios." EA 250. But it concludes that: "Substantial differences in effects to water quality are not anticipated between the Build and No Build Scenarios." Id.

The impacts of urban development on the fragile Edwards Aquifer recharge zones are extensively documented. Due to the highly permeable nature of the recharge zone, the

Aquifer is particularly vulnerable to pollution from runoff. For this reason, it is well recognized that the recharge zone is among the most environmentally sensitive areas in Texas.[46] The EA's assertion that substantial differences in effects to water quality are not anticipated between the build and no build scenarios is completely illogical. The effect to water quality based on increased impervious cover, construction phase pollution, and increased traffic will be substantially different under the build and no build scenarios.

In addition to finding that negative effects could result to groundwater, the EA finds that surface water could be adversely impacted. "These impacts could include additional impairments to existing 303(d) waters and/or impairment to unlisted streams. These impacts are not induced by or related to the proposed Loop 1604 proposal and are going to occur with or without the proposed improvements." EA 250. For the same reasons cited above (increased impervious cover, traffic, construction pollution) this statement is patently false. It also fails to take into account the induced growth around these sensitive streams that will cause the same increases cited above and add to the impacts of the project. Such faulty reasoning rests on an ill-defined area of effect, and an underestimation of the sensitivity of the Edwards Aquifer and the magnitude of the Loop 1604 project.

The degraded water quality in the Edwards Aquifer and its contributing streams due to the proposed project will be significant and must be evaluated in a full Environmental Impact Statement.

c. Land Use

The EA states that within the inadequate Area of Effect identified the maximum impact on land use is "the remaining 65,939 acres" of undeveloped and unplatted land but it is anticipated that "these areas would develop even in the absence of improvements to 1604." EA 246. Significant environmental effects will in fact occur due to increased sprawl development at a much larger scale than identified in the EA. *See Nat'l Wildlife Fed'n v. Coleman*, 529 F2d 359, 373 (5th Cir. 1976) ("The relevant consideration is the total impact of the highway . . . 'a far more subtle calculation than merely totaling the number of acres to be asphalted' is required where the environmental impact of a project at issue."). *Sierra Club v. United States Dept. of Transp.*, 962 F. Supp. 1037, 1043 (N.D. Ill. 1997); *accord Swain v. Brinegar*, 517 F.2d 766, 777 (7th Cir. 1975) ("highways have a profound influence on population growth, high-density urbanization, industrial expansion, (and) resource exploitation"); *Mullin v. Skinner*, 756 F. Supp. 904, (E.D.N.C. 1990) ("It is an irrefutable reality that the easier it is to get somewhere, the more people will be inspired to do so."); *City of Davis v. Coleman*, 521 F.2d 661, 676 (9th Cir. 1975) ("If the interchange is built, development will occur."); *Nat'l Wildlife Fed'n v. Coleman*, 529 F.2d 359, 373 (5th Cir. 1976) ("Principal among the indirect effects of the highway

[46]Texas Water Development Board, *Aquifers of Texas* 14 (Nov. 1995) ("The aquifer feeds several well-known recreational springs and underlies some of the most environmentally sensitive areas in the state."); Edwards Plateau Ecoregional Planning Team, The Nature Conservancy, *A Biodiversity and Conservation Assessment of the Edwards Plateau Ecoregion* 1-2 (2004) ("The Edwards Plateau is truly a unique place, even from a global perspective. . . . It is this varied ecological setting that makes the Edwards Plateau one of the most diverse biological regions in the world.").

on the crane is the residential and commercial development that can be expected to result from the construction of the highway.").

It is a judicially recognized fact, that "[h]ighways create demand for travel and expansion by their very existence."[47] The ensuing development is all but foretold.[48] One study concluded that "highway capacity-increasing projects, which are typically a response to current or anticipated increase in travel demand, have coincided with immediate land-development activities."[49] Another study found a dominant causal influence flowing from highway expansion to population growth.[50] Yet another study substantially confirmed the hypothesis that "road improvements and the resulting swifter travel speeds spur building activities along a corridor."[51] The bottom line is that new homes, offices, and retail stores appear near improved freeways within two to four years after construction.[52]

d. Indirect Effects to Endangered Species

"It is expected that these areas, both planned and unplanned, could be developed under the No Build scenario, and continued loss of golden-cheeked warbler habitat may occur if these areas are not developed in compliance with the Endangered Species Act of 1973. It is impossible to determine the degree to which future development would comply with the Endangered Species Act; however, based on the land use analysis, it is expected that the development of these properties would not be affected by the Loop 1604. Therefore, there would be no indirect effect from the Loop 1604 project on the golden-cheeked warbler within the Area of Effect. No other indirect effects to endangered species are anticipated under the Build Scenario." EA 254.

Because the Area of Effect was inadequately defined the conclusion that no indirect effects are anticipated is flawed and unreliable. These currently undeveloped lands are prime golden cheek warbler habitat and are the most threatened with destruction due to expanded capacity on 1604 under the Build alternative.

III. Other Significant Effects

a. Air Quality

The EA concludes that cumulative effects analysis is not necessary for air quality, "although in poor or declining health." The conclusion that cumulative effects analysis

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[47] *Sierra Club v. United States Dept. of Transp.*, 962 F. Supp. 1037, 1043 (N.D. Ill. 1997); *accord Swain v. Brinegar*, 517 F.2d 766, 777 (7th Cir. 1975).

[48] Thomas W. Sanchez, *Land Use and Growth Impacts from Highway Capacity Increases*, J.Urban Planning and Development 75 (June 2004); Robert Cervero, *Road Expansion, Urban Growth, and Induced Travel: A Path Analysis*, 69 APA Journal 145, 156-57 (Spring 2003); Neal R. Peirce, *Expansion Induces Traffic* (reporting that in the five years before I-270 was widened, 1,745 new homes were approved in the 12 miles north of Rockville, the major community on the route, while in the five years after the road was widened, 13,642 new homes were approved).

[49] Sanchez, *supra* note 48, at 81.

[50] Paul R. Voss and Guangqing Chi, *Highways and Population Change*, 71 Rural Sociology 33 (2006).

[51] Cervero, *supra* note 48, at 156.

[52] *Id*. at 156-57.

for air quality is not necessary is based on an assumption that air quality will *improve* over time in San Antonio based on improvements to vehicle emissions and traffic flow patterns over time. The EA provides no basis for the assumption that an increased number of vehicles traveling to and from San Antonio along 1604 along with increased vehicles and congestion time across the City will somehow reduce air pollution in a city where air quality is currently worsening.

The Loop 1604 project is located in Bexar and Guadalupe Counties, Texas, an area that has recently been classified as non-attainment under the Federal 8-hour ozone National Ambient Air Quality Standards (NAAQS).[53] Between 2000 and 2002, the San Antonio area experienced 17 days of unhealthy air quality, a 14.3% increase over the number of such days between 1993 and 1997.[54] That number spiked to 26 between 2003 and 2005.[55] Meanwhile, as of 2002, 11.3% of San Antonio residents had been diagnosed with asthma;[56] all while studies repeatedly demonstrate that even EPA's standards do not adequately protect against the development and exacerbation of such adverse health conditions.[57]

As one author put it, "[s]prawl means driving,"[58] which leads to greater air pollution, and mobile sources are already a significant source of air pollution in the San Antonio area.[59] Studies have shown that low density, low land use mix and disconnected street networks consistently predict greater air pollution emissions, even after controlling for demographic variables.[60] These pollutants have impacts to respiratory health and mortality as described above.[61]

By far, the greatest contributor to these problems in San Antonio is vehicle exhaust. Indeed, one report concluded that vehicle exhaust contributed over 57% of all criteria pollutants in the San Antonio area—second in the nation.[62] As more and more vegetation is removed due to urbanization air quality will continue to decrease. These emissions, including toxic constituents, result in current annual health-care related costs approaching $200 million.[63] A full Environmental Impact Statement is warranted due to the significant direct, indirect and cumulative impacts that the proposed project will have on air quality in San Antonio, an area already in non-attainment, and the hill country region.

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[53] United States EPA, *Ozone Air Quality Data Update, 2002-2004*.
[54] Surface Transportation Policy Project, *Clearing the Air—Texas Factsheet* (2003).
[55] *See* Texas Dept. of Environmental Quality, *High Ozone in Your Metro Area*, *at* http://www.tceq.state.tx.us/
cgi-bin/compliance/monops/ozone_summary.
[56] *Id*.
[57] Janneane F. Gent, et al., *Association of Low-Level Ozone and Fine Particles with Respiratory Symptoms in Children with Asthma*, 290 J. Am. Medical Assn. 1859, 1866-67 (Oct. 2003).
[58] Frumkin, *supra* note 93, at 65.
[59] *Clearing the Air*, *supra* note 62; *see also* Frumkin, *supra* note 93, at 68.
[60] Frumkin, *supra* note 93, at 78.
[61] *See also id*. at 80-89.
[62] Surface Transportation Policy Project, *Clearing the Air* 9 (2003).
[63] In 2001, health care related costs arising from air pollution from vehicles amounted to over $193 million. *Id*. at 36.

b. Tolling Impacts

Experience and practice clearly demonstrate that building extra capacity is nothing more than a band-aid solution treating a symptom but not the disease. Indeed, as along as peak travel demand is not addressed, any additional capacity will soon be overwhelmed and congestion reasserted at the same level as before. For instance, less than 8 years after expansion on I-270 outside of Washington D.C. was completed, traffic was once again reduced to a "rolling parking lot," with traffic peaking at levels projected for 20 years in the future.[64] As one expert stated,

> Unfortunately, once heavy peak-hour congestion has appeared in key parts of a region's road network, building new roads or expanding existing ones there does not reduce the intensity of such congestion much in the long run. Once commuters realize the capacity of specific roads has been increased, they will quickly shift their routes, timing, and modes of travel by moving to those roads during peak periods, thereby filling up the expanded capacity. . . . the resulting triple convergence will soon bring congestion back to its maximum levels during peak periods.[65]

Moreover, adding capacity in the form of toll roads in an already congested corridor is doubly foolhardy given that when toll lanes are built alongside non-tolled alternatives, congestion will not be alleviated, either in theory or practice.[66] This is so because toll roads can only succeed when there are significant speed differences between the toll road and any free alternative.[67] Indeed, the existence of non-tolled alternatives has been described as the "Achilles heel" of tolling. In order for people to opt for the toll road, "the free roadway must remain congested."[68]

It is for that reason that almost all privatized toll-road contracts include non-compete clauses designed to prevent improvements to nearby free roads.[69] For instance, a non-compete clause in the CA SR 91 contract prevented Orange County from improving conditions along the free access lanes to improve traffic flow,[70] even though traffic along the free lanes was crawling along at average peak hour speeds of no more than 15-20

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[64] Peirce, *supra* note 48.
[65] Downs, *supra* note 76, at 102.
[66] Kenneth A. Small, The Value of Value Pricing, 18 Access 17 (spring 2001) (tolling can only work "if we fail to make significant progress toward reducing congestion overall"); Anthony Downs, *Why Traffic Congestion Is Here to Stay . . . and Will Get Worse*, 25 Access 19, 23 (Fall 2004) ("But HOT lanes will only work if accompanying lanes remain congested. So HOT lanes do not eliminate congestion; they merely increase movement choices for drivers.").
[67] Small, *supra* note 66, at 17.
[68] *Id*.
[69] United States General Accounting Office, *Highways and Transit: Private Sector Sponsorship of and Investment in Major Projects Has Been Limited* 3 (Mar. 2004) (reporting that four of five privately franchised toll road projects contained non-compete clauses whereby the states agreed not to build new roads or improve existing roads that would compete with the toll road).
[70] Sylvia A. Smith, *Privately Owned Roads Not New*, Fort-Wayne Journal Gazette, 1/23/06; *see also* Gordon Dickson, *When Good Toll-Road Ideas Turn Bad*, Dallas-Ft. Worth Star Telegram, 1/23/06.

mph.[71] Public outrage over the non-compete clause for SR 91 caused Orange County to buy back the toll lanes from the toll authority for $207.5 million.[72] A non-compete clause in Colorado required that the speed limit on adjacent roads be dropped and that extra traffic signals be installed in addition to limiting improvements.[73] The result of building a toll road alongside non-tolled alternatives, then, is clearly both a traffic and financial disaster: congestion will not be alleviated and substantial amounts of additional public money will have to be spent to correct that failure.

Yet that is exactly what the future entails for the Loop 1604 corridor given that TxDOT is committed to providing non-tolled alternatives to any toll-road solution: the Alamo RMA's strategic plan mandates that.[74] The situation, then, is just like it is with SR 91, and just like it was with SR 91, it can readily be projected that congestion along the Loop 1604 corridor will not be alleviated and that substantial amounts of future public funds will have to be spent. Indeed, given the substantial economic impacts that any non-compete clause will have, TxDOT must disclose any potential plans to include such clauses in any franchise agreements. Failing to do so is tantamount to committing a fraud on the public.

Instead, TxDOT ought to be focusing on reducing peak demand along the Loop 1604 corridor. Ironically, the most straightforward way to address peak travel demand, however, is to do nothing. Indeed, in the long run, the most effective response to congestion is adaptation by individuals through adjusting their behavior.[75] Left alone, congestion increases the "price" of each marginal unit of travel to the level where the optimal number of drivers are on the road at any particular time. Congestion, then, is the principal means of allocating scarce road space among competing users. It is a symptom of the problem, not a problem in itself that needs to be solved.[76]

So, given that congestion is rooted in excess demand, the only real solution is to reduce peak travel demand. How can TxDOT do this? There are a lot of options that either individually, or in combination, can work to reduce peak travel demand. For instance, transit reduces peak travel demand by getting people of their cars. Likewise, ridesharing and telecommuting incentives along with park-n-ride programs and HOV lanes also get people out of their cars during the peak times. None of this should be new to TxDOT, though, given that all of these strategies are slated to be employed along the Loop 1604 corridor according to the San Antonio MPO's 2030 Metropolitan Transportation Plan.[77] In fact, FHWA's own guidance lists six categories of demand-management alternatives, including travel alternatives (alternate hours of travel, work schedules, telecommuting, etc.), land use alternatives (smart growth policies, pedestrian/bicycle connections, transit-

[71] Edward Sullivan, *Priced New Lanes-California: Express Lanes on State Route 91 in Orange County*, 10/6/2003. By comparison, traffic in the tolled lanes whizzed along at 60-65 mph.
[72] GAO, *supra* note 69, at 44.
[73] *Major Moves, Major Cost*, Mooresville/Decatur Times, 2/22/06.
[74] Alamo Regional Mobility Authority, Strategic Plan 2005-2009, at 7, 10.
[75] *Id*. at 13.
[76] *See* Anthony Downs, *Still Stuck in Traffic* 5-6 (2004).
[77] San Antonio Metropolitan Planning Organization, 2030 Metropolitan Transportation Plan, chp. 10, Congestion Management System, pp. 29-31. (2004).

oriented design), pricing alternatives (HOV lanes, parking pricing), HOV alternatives (rideshare matching, vanpools, priority HOV parking, etc.), transit alternatives (subsidized fares, trip itinerary planning), and freight alternatives (lane restrictions, delivery restrictions).[78]

TxDOT can also employ operational measures to ease the flow of traffic. For instance, TxDOT could implement advanced traffic signal coordination along with variable speed limit signs and time to destination signs. Websites showing real-time traffic conditions can also help alleviate congestion by informing commuters of a roadways' current status before departure. For instance, Oakland County in Michigan implemented advanced signal traffic coordination wherein real time traffic information is collected and displayed on a website while data from traffic cameras and in-road induction loops feed into a central computer that controls signal timing according to traffic loads. As a result of this program, overall afternoon peak-period stop delays decreased from 12.6 hours to 10.1 hours, while the percentage of vehicles stopped at intersections dropped significantly.[79] Similarly, the Automated Traffic Surveillance and Control Program in Los Angeles uses a computerized signal control system that has been in operation since 1984 and manages 1,170 intersections and 4,509 detectors for signal timing optimization. The program there has resulted in a 13 percent decrease in fuel consumption, 14 percent decrease in emissions, 41 percent reduction in vehicle stops, 18 percent reduction in travel time, 16 percent increase in average speed, and a 44 percent decrease in delay, all without a single inch of additional capacity being built.[80]

In addition to such operational solutions to congestion, access management techniques have also proven effective in Delaware and elsewhere to reduce congestion along a roadway.[81] According to FHWA, there are at least four proven access management techniques to improve the movement of traffic, reduce the frequency of crashes, and reduce the number of vehicle conflicts. Those techniques include access spacing (increasing the distance between traffic signals, which improves the flow of traffic on major arterials, reduces congestion, and improves air quality for heavily traveled corridors), driveway spacing (fewer driveways spaced further apart, which allows for more orderly merging of traffic and presents fewer challenges to drivers), turning lanes (dedicated left- and right-turn lanes, indirect left-turns and U-turns, and roundabouts to keep through-traffic flowing), and median treatments (two-way left-turn lanes (TWLTL) and nontraversible, raised medians are examples of some of the most effective means to regulate access and reduce accidents).[82] Indeed, FHWA specifically recommends roundabouts as a potential solution for intersections with many conflict points.[83]

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[78] Office of Operations, Federal Highway Administration, *Traffic Congestion and Reliability: Trends and Advanced Strategies for Congestion Management*.
[79] *Id*.
[80] Office of Operations, Federal Highway Administration, *Arterial Management: 21st Century Operations Using 21st Century Technologies* 2 (FHWA-OP-04-036, April 2004).
[81] DelDOT, *Access Management F.Y.I.*
[82] *Arterial Management*, at 2.
[83] *Id*.

Only as a last resort should TxDOT consider increasing supply, and even then, TxDOT must first consider supply options that address peak travel demand. For instance, TxDOT could construct reversible commuter lanes to accommodate peak travel demand with minimal supply increases. Similarly, dedicated rapid bus transit lanes would increase the supply, but in such a way that demand would actually decrease rather than increase in response to the additional supply.

TxDOT ought not fall into the trap of thinking that building extra capacity is the solution. Doing so ignores the demand side of the problem. Absent measures to reduce demand at the same time as supply is increased will result in a new equilibrium marked by the same congestion exhibited before. That is hardly an appropriate "solution."

c. Other Long-Term Impacts to Be Considered

The EA incorrectly concludes that development will occur at the same rate with or without the proposed project and thus cumulative effects are minimal. "The proposed improvements, as well as any other links in the transportation network, would complement the land use and transportation changes in the area, but it can not be considered the primary reason for the changes to occur. The area's development, without improvements to these roadways is anticipated to continue regardless of the proposed construction activities. The proposed project could increase and accelerate development, but the impact would be inconsequential, since the area has been developing rapidly without improvements to Loop 1604." EA 282.

Earlier in the document, however, it is admitted that there will be an increase in local development due to the proposed project: "With implementation of the Build Alternative, it would seem reasonable to conclude that as the width of the roadway increases, the loss of some wildlife species due to vehicular causes would decrease since some species would tend to shy away from wider open spaces that an expanded facility would present. However, some of these vehicular losses might be influenced *by the increase in local development that would ultimately force local wildlife to seek refuge in other areas*, and thus forcing animals to enter areas where they might not normally enter or cross exposing them to risks of increased fatality." EA 176 (emphasis added).

It is readily foreseeable that any project along Loop 1604 will have growth inducing impacts, which federal regulations require TxDOT to analyze.[84] It will therefore be a far stretch for TxDOT to conclude that these impacts do not have a likely substantial impact on the environment given that they already have. For example, in 1999, a motorist backed into a gasoline pump at a Texaco station located along US 281, several miles into the recharge zone.[85] Though only a few gallons spilled from the pump itself, an unnoticed rupture in the line connecting the pump to the underground storage tank leaked an estimated 800 to 900 gallons of gasoline.[86] Within days, the spill contaminated

[84] 40 C.F.R. § 1508.8(b). To the extent that TxDOT would like to disclaim responsibility for these impacts, they cannot. *See Nat'l Wildlife Fed'n*, 529 F.2d at 374 ("The appellees do control this development to the extent that they control the placement of the highway and interchanges.").
[85] Rudolph Bush, *800-Gallon Spill May Pollute Aquifer*, San Antonio Express-News, 7/22/1999, at 1B.
[86] *Id*.

several nearby water wells, all despite the fact that the gasoline station met all codes and environmental regulations.[87]

Thus, TxDOT need not speculate about possible likely environmental impacts. Such environmental impacts associated with urban development have already occurred. The EA notes at one point: "There are several previously contaminated hazardous material sites within or adjacent to the proposed project area for the Build Alternative and may contain residual soil contamination." EA 9. And later: "Several hazardous materials sites located within the project area have the potential to impact the Build Alternative." EA 232. In fact, in 1988, 28 oil and chemical spills occurred in Bexar County, representing the greatest number of land-based spills in central Texas affecting surface and/or groundwater.[88] Furthermore, through just the first half of 1988, between 26 and 50 underground storage tanks were confirmed to be leaking, placing Bexar County as second among central Texas counties with underground storage leaks.[89] That was in 1988; "[i]ncreasing urbanization in Bexar County will increase the risk that leaks and spills may harm karst ecosystems."[90]

The literature also supports the fact that urbanization has significant environmental impacts. Studies have demonstrated that low-density, automobile dependent development is a leading cause of imperviousness.[91] In fact, transportation-related hard surfaces account for over 60% of the total imperviousness in suburban areas.[92] That amount of impervious cover over the Edwards Aquifer Recharge Zone will substantially decrease recharge into the Aquifer and thereby impact water supply.
The literature also uniformly reports that sprawling developments such as those that will surely crop up along Loop 1604 as a result of any improvements contribute large loads of pet wastes, nutrients from fertilizers, and toxic chemicals from pesticides to local waterways.[93] The increased impervious cover is tantamount to increased runoff and pollution.[94] Impervious surfaces collect and accumulate pollutants deposited from the atmosphere, leaked from vehicles, and otherwise deposited on the impervious surface with nowhere else to go. During storms, all of this deposited material is quickly washed off and rapidly delivered to aquatic systems. The recognized consequences of this runoff includes flooding and property damage, streambank and streambed erosion, siltation and sedimentation, increased water temperature, harm to aquatic life, harm to coastal fisheries, harm to sport fishing, human illness, impacts to drinking water supply, and aesthetic losses.[95]

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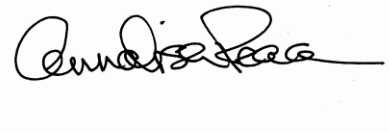
[87] Bush, *supra*, at 3B.
[88] United States Fish and Wildlife Service, *Final Rule to List Nine Bexar County, Texas Invertebrate Species as Endangered*, 65 Fed. Reg. 81,419, 81,425 (Dec. 26, 2000).
[89] *Id*.
[90] *Id*. at 81,426.
[91] Paving Our Way to Water Shortages 8, *at* http://www.smartgrowthamerica.org/DroughtSprawlReport09.pdf.
[92] *Id*.
[93] Howard Frumkin, Lawrence Frank & Richard Jackson, *Urban Sprawl and Public Health* 65 (2004).
[94] *See generally*, Center for Watershed Protection, Site Planning for Urban Stream Protection 19-37; Thomas Schuler, The Importance of Perviousness.
[95] Natural Resources Defense Council, *Stormwater Strategies*, ch. 3

All told, then, there are substantial, readily foreseeable impacts to any project along Loop 1604. These impacts extend well beyond the narrow right of way for the road.[96] TxDOT cannot turn a blind eye to these impacts to conclude that there is no likely substantial impact to the environment. TxDOT must raise its eyes up to the horizon to see the full extent of the environmental impacts of any proposed project. To fail to do so would violate both the letter and the spirit of NEPA and its implementing regulations.
The cumulative effects of this project on land use, and thus water quality, vegetation, endangered and threatened species, wildlife, and the social and aesthetic environment will be significant and should be explored in a full EIS.

The proposed project will have significant environmental effects on the human and natural environment that must be explored and evaluated in a full Environmental Impact Statement.

Please feel free to contact us if there are any questions or concerns.

Sincerely,



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[96] *See* Sanchez, *supra* note 48, at 78 (reporting that on average between 30-40% of "cells," grid areas 152m on a side, within 1.6km of road improvements get developed).