UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
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JUL 23 2013

OFFICE OF THE
REGIONAL ADMINISTRATOR

Karla Petty
Arizona Division Administrator
Federal Highway Administration
4000 North Central Avenue, Suite 1500
Phoenix, AZ 85012

Subject: South Mountain Freeway Project, Maricopa County, Arizona [CEQ#20130104]

Dear Ms. Petty,

The U.S. Environmental Protection Agency has reviewed the Draft Environmental Impact Statement (DEIS) for the South Mountain Freeway Project. Our review and comments are provided pursuant to the National Environmental Policy Act, the Council on Environmental Quality Regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act.

As stated in the DEIS, the South Mountain Freeway Project is a proposal to build a new 8-lane freeway extending approximately 22 to 24 miles from the Interstate 10 and Santan Freeway interchange westward through the community of Ahwatukee, paralleling the Gila River Indian Community (GRIC) border. The DEIS has identified a preferred alternative which is estimated to displace 845 housing units, including 680 multifamily units and 165 single family residences.

The project represents a new highway alignment in a heavily urbanized area currently designated as nonattainment for particulate matter less than 10 microns in diameter (PM10). It is therefore critically important that potential impacts to air quality be accurately analyzed, disclosed, and reduced as much as possible. The DEIS does not provide the information needed to assess the potential significance of the air quality impacts of the proposed action. In view of the area's current designation as nonattainment for PM10, it is essential to accurately assess and disclose potential PM10 hotspot impacts, as well as determine whether the project meets the transportation conformity requirements of the Clean Air Act. The Act and its implementing regulations provide that a project may not cause or contribute to any new localized violation of a national ambient air quality standard (NAAQS), increase the frequency or severity of any existing violations, or delay timely attainment of the NAAQS (CAA section 176(c)(1)(B) and 40 CFR 93.116(a)). The analysis found in the DEIS does not provide the information necessary to make an accurate determination of PM10-related impacts. It also does not sufficiently address other potential air quality issues of concern. The EPA is available to work with FHWA and other agencies to complete needed analyses as this effort moves forward.

The DEIS presents no stand-alone emissions analyses of the portion of the project that introduces new general purpose lanes, despite indications from the carbon monoxide (CO) hotspot analysis that

concentrations of criteria pollutants will increase relative to current levels, along with increased emissions of mobile source air toxics (MSATs). The potential increase indicated by the analysis would occur despite the fact that per-vehicle emissions are declining substantially over time. Instead, the DEIS presents an estimated value of emissions that combines the impact of the new freeway alignment with emissions from the adjacent, and existing, I-10 freeway. This methodology does not provide the information needed to disclose, analyze and potentially mitigate the actual emissions anticipated from a new highway segment. Additionally, we believe the analysis of congestion and emissions impacts from the No Action alternative includes estimates of congestion and vehicle miles traveled (VMT) that are higher than appropriate considering relevant facts and analysis. As a result, the relative benefits of all Action alternatives when compared to a future No Action alternative are likely to be overstated.

We also note that no air toxics risk assessment has been provided, even though there is a documented history of local public concern and requests to ADOT and FHWA for analysis of the potential health effects from the proposed new freeway. We do not believe the reasoning provided in the DEIS for not providing such an assessment is compelling, especially in light of the history of requests for such analysis. Risk assessments for air toxics from vehicle traffic have been included in many published studies as well as in EISs for other projects. EPA has emission and air quality models that can be used to predict concentrations of air toxics at receptors near the project, and we would be happy to assist ADOT and FHWA in using the models, which are available on EPA's web site.

Based upon this lack of information important to analyzing the project's potentially significant impacts on air quality, EPA has rated the South Mountain Freeway DEIS as "3 – Inadequate Information" (see Enclosure 1: "Summary of Rating Definitions and Follow-Up Action"). EPA believes the following information would serve as the basis for a robust and meaningful air quality analysis: 1) Assessment and disclosure of potential PM10 hotspot impacts and confirmation of whether the project meets the Clean Air Act's transportation conformity requirements; 2) Emissions analyses that present the emissions of the South Mountain Freeway corridor separate from those of I-10, along with updated traffic forecasting for the No Action alternative; and 3) A robust air toxics risk assessment that addresses potential health effects from the proposed new freeway.

We recommend this information be circulated in a Supplemental DEIS for public comment, in accordance with NEPA and CEQ's NEPA Implementation Regulations. EPA respectfully requests the opportunity to review this information and provide ADOT and FHWA our feedback before a Supplemental DEIS is published. In the attached detailed comments, we also provide recommendations regarding the assessment of impacts to children's health, environmental justice, aquatic resources and other issues we recommend be addressed in the NEPA document.

We appreciate the opportunity to review this DEIS and look forward to working with ADOT and FHWA to address the issues outlined in this letter. If you have any questions, please refer staff to Clifton Meek at (415) 972-3370 or to Angeles Herrera, Associate Director in our Communities and Ecosystems Division, at 415-972-3144. Please send a copy of the Supplemental DEIS to this office (mail code CED-2) when it is electronically filed with our Washington, D.C. office.

Sincerely,

Jared Blumenfeld

Enclosures
(1) Summary of EPA Rating Definitions
(2) EPA's detailed comments on the South Mountain Freeway DEIS

cc via email: Alan Hansen, Federal Highway Administration
Rebecca Yedlin, Federal Highway Administration
John Halikowski, Arizona Department of Transportation
Ralph Ellis, Arizona Department of Transportation
Chaun Hill, Arizona Department of Transportation
Kathleen Tucker, U.S. Army Corps of Engineers
Kelly Wolff-Krauter, Arizona Game and Fish Department
Steve Spangle, U.S. Fish and Wildlife Service
Ondrea Barber, Gila River Indian Community
Dennis Smith, Maricopa Association of Governments

SUMMARY OF EPA RATING DEFINITIONS

This rating system was developed as a means to summarize EPA's level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the EIS.

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

ADEQUACY OF THE IMPACT STATEMENT

Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, “Policy and Procedures for the Review of Federal Actions Impacting the Environment.”

U.S. EPA DETAILED COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE SOUTH MOUNTAIN FREEWAY PROJECT, MARICOPA COUNTY, ARIZONA, JULY 23, 2013

Air Quality

A new 22- to 24- mile 8-lane freeway in the greater Phoenix area has the potential to negatively affect regional air quality, which is particularly important in light of the existing air quality challenges facing Phoenix and recent efforts to address PM10 undertaken by the Maricopa Association of Governments, Maricopa County Air Quality Department, and Arizona Department of Environmental Quality. Portions of Maricopa County (Phoenix PM10 nonattainment area) are federally designated as serious nonattainment for the 1987 PM10 NAAQS. Currently, the area is violating the 24 -hour PM10 NAAQS of 150 µg/m3. Further, while Maricopa County is currently designated attainment/unclassifiable for the 2006 24-hour and 1997 annual PM2.5 NAAQS of 35 µg/m3 and 15 µg/m3, respectively, monitors in the Phoenix area measure concentrations that approach the new 2012 annual PM2.5 NAAQS of 12 µg/m3. Moreover, the Phoenix area is federally designated as "marginal" nonattainment area for the 2008 Ozone NAAQS and continues to violate the 8-hour Ozone NAAQS of 0.075 ppm. Portions of Maricopa County are also maintenance for the CO NAAQS. Therefore, it is critical that the project's assessment of potential air quality impacts be accurate and thorough. As described below, EPA provides comments and recommendations concerning our finding that the DEIS did not adequately assess and identify potential air quality impacts from the new proposed freeway.

Transportation Conformity

As the project is both 1) located in a PM10 nonattainment area that continues to experience exceedances of the PM10 NAAQS, and 2) needs a PM10 hot-spot analysis according to the transportation conformity regulation at 40 CFR 93.123, it is critical to accurately assess and identify potential PM10 hotspot impacts, as well as determine whether or not the project meets transportation conformity requirements found in the Clean Air Act. However, the DEIS does not do so adequately, and EPA has identified substantial deficiencies in the current draft analysis that preclude the ability to determine whether the project complies with transportation conformity requirements.

First, since the analysis presented is a qualitative one, rather than a quantitative one, the DEIS should clarify when the analysis started and whether the analysis was begun during the grace period for quantitative analyses.[1] Furthermore, the DEIS seems to indicate that the years 2020 and 2035 are being examined but does not clearly explain why these years are chosen for analysis. Section 93.116(a) of the transportation conformity rule requires that PM hot-spot analyses consider the full time frame of an area's transportation plan. To meet this requirement and the general requirements in Section 93.123(c)(1), hot-spot analyses should include the year(s) within the transportation plan during which peak emissions from the project are expected and any new NAAQS violation or worsening of an existing violation would most likely occur due to the impacts of the project and background concentrations in the project area.

While the DEIS provides some information about increases in vehicles, information about total numbers of vehicles and the numbers of diesel trucks on the proposed highway is not easily found in the narrative. Complete traffic data for the proposed project should be included in a PM hot-spot analysis, regardless of whether the analysis is qualitative or quantitative. This section of the DEIS does

1 The grace period for using MOVES for quantitative PM hot-spot analyses has ended (i.e., any new analyses begun after December 20, 2012, must be quantitative and rely on MOVES) (December 20, 2010, 75 FR 79370)

not include the average daily traffic (ADT) of the new highway, or the number of trucks within overall traffic volumes. Without this information clearly presented, it is difficult to assess whether the air quality monitor chosen as the comparison for the draft qualitative PM hot-spot analysis represents the expected traffic from the project.

The DEIS should state which method from the 2006 EPA-FHWA PM qualitative guidance was used, (i.e., "Comparison to another location with similar characteristics," from Section 4.1 A of the 2006 guidance). [2] Page 4-68 of the DEIS states that the monitoring locations used for the PM10 qualitative analysis were the Central Phoenix and the Greenwood monitoring sites because they "most closely resemble the characteristics of the Buckeye Road and Baseline Road Interchanges in 2035." This choice of monitoring sites requires further explanation. When comparing the project location to other monitoring locations in the area, the Buckeye monitor may better represent project characteristics such as nearby traffic activity and surrounding land use. Given the contribution of fugitive dust sources to the concentrations of PM10, the monitors referenced in the analysis may underestimate fugitive dust present at the source as they appear to represent central Phoenix, with little proximity to the arid land surfaces near the proposed project.

In addition, the draft qualitative PM10 hot-spot analysis does not address whether transportation-related construction emissions should be considered in the analysis. Section 93.123(c)(5) of the conformity rule states that construction-related PM emissions due to a particular project are not required to be included in a hot-spot analysis if such emissions are considered temporary (i.e., emissions which occur only during the construction phase and last five years or less at any individual site). It is unclear whether the current draft analysis has met this requirement or whether the period of construction and the emissions that would be generated were considered in the selection of analysis years for this project.

Similar issues regarding the MOVES grace period and the analysis years apply for the CO analysis included in the DEIS. It is unclear from the DEIS when the project-level CO analysis started in relation to the grace period for the latest version of the MOVES model (MOVES2010). The DEIS states that the CO analysis was performed for the existing condition (2010) and for the action and No-Action alternatives in the design year (2035). However, the year of peak emissions must be examined in a hot-spot analysis, which is not necessarily the design year.

Given the magnitude of the proposed project and its potential to negatively affect regional and local air quality, we provide the following recommendations:

Recommendations:

- Address the deficiencies in the current qualitative PM10 hot-spot analysis, and demonstrate how a revised qualitative analysis complies with CAA conformity requirements for the PM10 NAAQS. Clearly explain and document how the qualitative analysis complies with applicable requirements of the CAA and transportation conformity regulations for conducting a hot-spot analysis. Completing a quantitative PM hot-spot analysis that meets applicable requirements and is fully documented is an option that continues to be available as well. EPA guidance for a quantitative PM analysis is available and can be used.[3] EPA is available to coordinate with

2 "Transportation Conformity Guidance for Qualitative Hot-spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas," EPA420-B-06-902, March 2006.

[3] See http://www.epa.gov/otaq/stateresources/transconf/policy/420b10040.pdf for details on completing such analyses.

ADOT and FHWA through interagency consultation to confirm use of accurate modeling methodology, assumptions, and data for the analysis.

- Clearly indicate what the year(s) of peak emissions is expected to be, including supporting information for why that year(s) will result in peak emissions. Include a table with 2020 total ADT, 2020 diesel truck numbers, 2035 ADT, and 2035 diesel truck numbers, or other year(s) where peak emissions are expected. Provide complete traffic information for the new project and provide the source of this data, or provide a page number if this data is found elsewhere in the DEIS.
- Clarify, including a specific date, when the project-level CO and PM10 hot-spot analyses began.
- EPA believes this is a project of local air quality concern that needs a PM10 hot-spot analysis, but we recommend additional documentation in the conformity section. Discuss why, for PM10, this is a "project of air quality concern" under 40 CFR 93.123(b)(1), including a reference to the number of diesel vehicles expected on the freeway in the analysis year (s) of peak emissions.
- Clarify which method from the 2006 EPA-DOT PM qualitative guidance was used, i.e., "Comparison to another location with similar characteristics," from Section 4.1 A of the 2006 guidance. If this method was relied on, provide additional discussion of how the location selected for comparison represents the proposed project.
- As stated in the Air Quality Technical Report provided to our agency on June 15, 2013, ADOT and FHWA will be completing a "final transportation conformity determination" prior to releasing the Final EIS. EPA recommends initiating interagency consultation with our agency prior to the development of the draft transportation conformity analysis, as we believe consultation with EPA prior to the draft analysis will allow for important feedback regarding analysis and methodology.
- In addition, due to the extended construction phase of the project, additional explanation and documentation is needed that 40 CFR 93.123(c)(5) is met.

Emissions Analyses and Traffic Forecasting

The air quality impacts presented in the DEIS for the entire alignment of the South Mountain Freeway corridor are not adequately assessed. The analysis incorporated existing I-10 emissions with emissions anticipated from the project into a "sub-area" which does not permit a clear understanding of emissions from the new freeway alignment, separate from the current setting. For example, the emission trends presented in Chapter 4 convey the conclusion that the preferred alternative reduces emissions throughout the study area. However, the DEIS presents no emissions analyses of the South Mountain Freeway corridor itself, despite indications from the CO hotspot analyses (tables 4-31 and 4-32) that concentrations of criteria pollutants along the Pecos Road corridor will increase above current levels (in spite of falling CO emission factors over time), and indications that MSAT emissions will be higher in the future. Since the South Mountain Freeway corridor is the area to be most heavily affected, not presenting the emissions along the corridor prevents the public and decisionmakers from gaining a clear understanding of the extent of impacts from the different Alternatives and the potential basis for reducing impacts.

Recommendations:

- Emissions analyses should be revised with the South Mountain Freeway corridor modeled independently of I-10 and other roads.

- Emissions trends from the South Mountain Freeway corridor should be presented, by themselves, in addition to emissions along other road links (e.g., I-10).

Chapters 1 and 4 of the DEIS appear to overstate traffic problems and emissions resulting from the No Action alternative and the benefits of the Action alternatives. The population projections employed in the DEIS are based on pre-recession projections, and now exceed the current highest population projections for Maricopa County by Arizona's Office of Employment and Population Statistics. As a result, the forecasted traffic problems and emissions associated with all alternatives in the DEIS are likely higher than what is reasonably expected to occur based on more current data. Additionally, the congestion issues and emissions that the DEIS describes as a result of the No Action alternative include more trips and more congestion than are reasonable to expect. As a result, the relative benefits of Action alternatives are also likely to be overstated. This overestimate occurs because the travel model forecasts for the Action and No Action alternatives employ the same socioeconomic projections from the Maricopa Association of Governments, which are based on municipal master plans. The underlying master plans assume that the South Mountain Freeway is completed, and do not have land use plans that represent the No Action alternative.

Recommendations:

- Present congestion impacts and emissions for the No Action alternative using updated socioeconomic projections that do not assume completion of the South Mountain Freeway (with appropriate caveats about uncertainty).
- Present the comparison of impacts from the Action and No Action alternatives to reflect the likely differences in land use (e.g., residential and commercial development) between the Action and No Action alternatives.

Health Effects

The proposed South Mountain Freeway will place a high-volume roadway adjacent to hundreds of residences and several schools. Although the DEIS did not analyze the number of residences remaining within a designated "buffer of impact" (i.e. within 500 feet of the centerline or edge of the new highway alignment), the document does state that the preferred alternative will displace 845 units, including 680 multifamily residences and 165 single family residences. This is an indication of the urbanized footprint of the proposed project and raises a question regarding the number of remaining residences within close distance of the new highway. It also raises the importance of fully assessing, disclosing, and identifying mitigation measures to address the potential health-related impacts to the remaining adjacent residences. Further, as proposed, the new highway alignment will place 8 lanes of high-volume freeway traffic adjacent to Gila River Indian Community (GRIC) land, where little development, residences, or sensitive receptors currently exist. The disclosure of the potential health impacts of the highway within the EIS process could assist the future of GRIC land-use planning and zoning decisions regarding the types of land uses that will be appropriate directly adjacent to the new freeway.

In addition to the requirement of NEPA to evaluate and disclose such impacts, FHWA has received numerous public comments expressing concern about the potential health impacts in their communities related to air pollution emitted by construction and operation of the proposed South Mountain Freeway (see Chapter 6 appendices). EPA also received request letters asking us to require ADOT and FHWA to assess health impacts of the proposed freeway. We discussed these requests during an interagency call with ADOT and FHWA on February 23, 2010. The DEIS currently does not address these

community concerns. A new freeway would significantly increase the exposure of the surrounding community to mobile source air pollution, including diesel emissions. As many studies suggest this increased exposure is problematic to health, the DEIS should include an air toxics risk assessment that assesses potential health impacts of the project and characterizes exposures to and risks from the pollutants of concern. This analysis could be useful for decision makers by indicating areas where future risk would be elevated, and further mitigation could be considered.

EPA does not agree with the characterization in the DEIS of available modeling tools for conducting emissions and dispersion modeling and risk assessment. The uncertainties in modeling discussed between pages 4-68 and 4-76 have been well-known factors in risk assessment since at least 1983 (http://www.epa.gov/risk_assessment/history.htm), and EPA's risk assessment guidance includes much discussion of such uncertainties, including low-dose extrapolation, and how modeling results may be characterized and assessed in view of these uncertainties. EPA's guidelines on risk assessment have been the subject of numerous reviews by EPA's Scientific Advisory Board and the National Research Council.

Recommendations:

- Analyze and discuss the potential health impacts from the construction and operation at full build out of the new proposed 8-lane freeway to possible receptors along the new corridor.
- The supplemental EIS should describe all sensitive receptors that may be impacted, along with possible mitigation measures to reduce impacts.
- Coordinate with GRIC to disclose potential health impacts from the new freeway corridor so that information will be available to GRIC to assist with land-use and zoning decisions along GRIC lands that are adjacent to the new corridor.
- Available data and methodology for assessing health impacts are provided below.

All of the existing tools and guidance needed to perform a risk characterization for air toxics are available for free on EPA's web site:

- Emissions of air toxics from individual road links may be modeled with MOVES (http://www.epa.gov/otaq/models/moves/index.htm).
- AERMOD may be used to model ambient concentrations of toxics at locations in the project area, given emissions from MOVES. For guidance on how to conduct such analyses, consult the document, "Transportation Conformity Guidance for Quantitative Hot-spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas." (http://www.epa.gov/otaq/stateresources/transconf/projectlevel-hotspot.htm#pm-hotspot)
- Given ambient concentrations of air toxics, risk characterization can be done using EPA guidance and data:
    - EPA's Air Toxics Risk Assessment Reference Library (http://www.epa.gov/ttn/fera/risk_atra_main.html) describes how to conduct risk assessment "at the facility and community scale." Volume 1 of the library describes the process and basic technical tools for these analyses, and Volume 2 describes detailed procedures for source-specific or facility-specific risk assessment.
    - EPA's IRIS web site (http://www.epa.gov/IRIS/), referenced on page 4-69, includes the "individual unit risk estimates", also known as "potencies" or "slope factors," which may be employed in the process of cancer risk assessment, and reference concentrations for noncancer risk assessment.

    - EPA's Health Effects Notebook for Hazardous Air Pollutants also includes information on some of the MSATs, including benzene, 1,3-butadiene, formaldehyde, acetaldehyde, acrolein, and POMs (http://www.epa.gov/ttn/atw/hlthef/hapindex.html).
    - Detailed cancer risk assessment guidance is available in the following EPA documents:
        - "Guidelines for Carcinogen Risk Assessment" (2005) (http://epa.gov/cancerguidelines/)
        - "Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens" (http://epa.gov/cancerguidelines/sup-guidance-early-life-exp-carcinogens.htm)
- If necessary, exposure modeling can be performed using models available from EPA's web site:
    - The Air Pollutants Exposure Model (http://www.epa.gov/ttn/fera/human_apex.html)
    - The Hazardous Air Pollutant Exposure Model (http://www.epa.gov/ttn/fera/human_hapem.html)
    - Another document that can address exposure modeling is EPA's Exposure Factors Handbook (http://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=236252).

Children's Environmental Health and Safety

Executive Order 13045 on Children's Health and Safety directs each Federal agency, to the extent permitted by law, to make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children, and to ensure that its policies, programs, activities, and standards address these risks. Analysis and disclosure of these potential effects under NEPA is necessary because some physiological and behavioral traits of children render them more susceptible and vulnerable than adults to environmental health and safety risks. Although the DEIS identifies communities and public schools located near the proposed project area, the DEIS does not clearly describe the potential direct, indirect, and cumulative impacts of the project on children's health.

Recommendations:

- Evaluate the potential direct, indirect, and cumulative health impacts of the construction and operation of the various project alternatives on children's health. Obtain and discuss relevant health data (e.g., asthma data) for children living near the proposed project area, if available. The analysis should consider the following:
    - Potential respiratory impacts, including asthma, from air pollutant emissions and generation of fugitive dust;
    - Potential noise impacts to health and learning, especially in areas where the project is located near homes, schools, childcare centers and parks; and
    - Potential impacts from the use of chemicals, such as dust suppressants, and hazardous materials to children living near the proposed project areas.
- The population of children living within the affected communities and potential impacts to children's health should be added to the discussion on pages 4-29 through 4-38.
- Additional sensitive receptors, including private schools, charter schools, preschools, and childcare centers, should be added to Figure 5-6, and a discussion of the potential project impacts, including air quality and noise, to these sensitive receptors should be included.
- Further evaluate the proposed project alternatives in order to compare potential impacts to children's health. Clearly identify the project alternatives that have the least impact to children, as well as those alternatives that have the least impact on areas already significantly impacted by existing air pollution, high disease rates, and indicators of social vulnerability.

- Identify mitigation measures to reduce impacts from the proposed project's construction and operation to schools and child care centers near the proposed project area, including measures identified in the voluntary EPA School Siting Guidelines (http://www.epa.gov/schools/siting/download.html), and voluntary EPA Guidelines for States: Development and Implementation of a School Environmental Health Program (http://www.epa.gov/schools/ehguidelines/index.html). Engage local school districts, child care providers, and others to discuss mitigation measures.

Construction Emissions

Page 4-161 discusses mitigation measures to be implemented to reduce emissions from construction. In addition to the identified measures, EPA recommends that FHWA consider implementing the mitigation measures listed below.

Recommendations:

- Implement a strong anti-idling policy at all construction sites, and limit idling of heavy equipment and trucks to less than five minutes.
- Larger Tier 4 construction equipment will be more widely available in 2015.[4] To the extent practicable, starting in 2015, limit construction equipment to EPA's Tier 4 emission standards.
- Commit to the use of construction equipment powered by alternative fuels (i.e., biodiesel, compressed natural gas, and electricity) where feasible.
- Train construction contractors and their employees on air quality impacts from construction activities and potential health risks to nearby receptors, and ways to reduce emissions (no idling, using PM filters, using alternative fuels, etc.).

Displacement

Page 4-39 states that the preferred alternative will displace 165 single family residences and 680 multifamily residences, for a total of 845 displaced units. While this represents the fewest single family homes affected (other alternatives range in impacts from between 710 to 969 when adding the Eastern and Western alignments), the preferred alignment is the only alignment that will affect multifamily residences (other alternatives will affect no multifamily residences). The DEIS discussion of displacements focuses mainly on single residences being affected and lacks important detail regarding multifamily residential impacts. Page 4-40 states a rental vacancy rate of 9% for the displaced multifamily residences, based on 2009 data. It is unclear what opportunities exist currently for the potentially displaced 680 multifamily residences. The Environmental Justice Analysis on page 4-38 states that the "availability of replacement housing" for Section 8 vouchers is not easily quantified. It is therefore not clear to what extent low-income and/or minority populations will be affected by the project. Additional mitigation and/or community outreach, and assistance may be necessary to offset relocation impacts.

4 More information is available at http://www.dieselnet.com/standards/us/nonroad.php.

Recommendations:

- Commit to specific mitigation measures to minimize the impacts of displacement and relocation on low-income and minority populations, with particular attention to the needs of those living in below-market rental housing. Identify each measure along with a description of the responsible party, timing for implementation, and length of time anticipated for complete implementation.
- Include commitments to specific funding options or other policy measures that would ensure the relocation of all displaced residents to decent, safe, and sanitary replacement housing that is within the residents' financial means.
- Discuss specifics of how and where potential relocation could occur, including reference to actual locations where housing can either be built or currently exists. Include a clear timeline, with responsible parties identified, to indicate the schedule for proposed relocations compared with the schedule for the proposed construction of the project.
- Include a more comprehensive vision of the future proposed relocation plan for affected residents as a result of this and other transportation projects in the area. ADOT and FHWA should provide additional information on assumptions, estimates, and projections for where displaced residences will ultimately live based on current (rather than 2009) estimates.
- Conduct interviews with all potential displaced residents to determine relocation needs. Confirm that those who have special needs will be accommodated with a plan for assistance as needed. Based on the results from the interviews, consider additional measures to minimize the impacts of relocation, such as providing translations services, transportation to visit potential replacement housing, and/or additional relocation specialists to work with these communities.
- To mitigate community character and cohesion impacts to low-income and minority communities, conduct public workshops and work directly with affected populations to identify effective and creative ways to minimize or mitigate these impacts.

Noise Impacts

The DEIS compares estimated noise levels to FHWA Noise Abatement Criteria. It is unclear whether potential project impacts to interior noise levels were estimated.

Recommendations:

- Clarify whether mitigated interior noise levels were estimated for homes, schools, childcare centers, and other sensitive receptors. If not, assess the potential interior noise levels that may be experienced at these locations. Discuss the potential noise impacts on health and learning, especially at homes, schools, and childcare centers.
- Page 4-90 of the DEIS identifies noise walls or earth berms as noise mitigation measures. As several homes and learning environments are located near the proposed project alignments and may be affected by both the construction and operation of the proposed project, EPA recommends that FHWA consider other noise mitigation measures, such as retrofitting homes, classrooms, and childcare centers with acoustic insulation.

Tolling

EPA is aware that several toll feasibility studies are underway in the Phoenix metropolitan area for roadways that are near or adjacent to the proposed project corridor, including I-10, I-17, and the proposed North-South Corridor. Tolling on these roadways has the potential to significantly affect traffic on the future South Mountain Freeway by reducing traffic on tolled facilities and shifting traffic

to non-tolled roads. This has potential implications for analyses of air quality, noise, and environmental justice, as well as additional potential indirect and cumulative impacts. It is unclear whether any toll feasibility study was conducted for the proposed South Mountain Freeway, and there is no discussion in the DEIS of the current toll feasibility studies on adjacent roadways.

Recommendations:

- Disclose results of any toll feasibility study conducted for the proposed project. If no toll feasibility study was conducted, provide a discussion as to why.
- Provide details of current toll feasibility studies being conducted on nearby roadways. Include a discussion of how future tolling on these roadways could affect traffic and associated impacts on the South Mountain Freeway.

Coordination with Gila River Indian Community and Impacts to Sacred Sites

The DEIS describes extensive coordination with the Gila River Indian Community (GRIC) and a history of considering a possible freeway alignment on GRIC lands. We understand that there is still interest within the GRIC community for analyzing a possible freeway alignment on GRIC lands that would avoid the impacts to sacred sites that will result from the current preferred alignment. While we understand that there may never be one alignment route fully supported by the entire tribal community and government, we encourage ADOT and FHWA to continue to work closely with GRIC to reduce impacts to sacred sites and traditional cultural properties to the greatest extent possible.

Further, there are many resources regarding the potential health impacts of locating sensitive receptors adjacent to freeways as well as the benefits of smart growth and location efficient housing. ADOT and FHWA should disclose these potential near-roadway health impacts and ensure GRIC has access to the most current information available regarding optimizing land use decisions and safeguarding health in the face of a potential new freeway directly adjacent to GRIC land.

Recommendations:

- Continue to work closely with GRIC to reduce the proposed project impacts to sacred sites and traditional cultural properties.
- Evaluate all mitigation measures suggested by GRIC to determine their effectiveness and feasibility. Identify where implementation of GRIC mitigation measures has been rejected and provide a discussion of the reasons for rejection.
- Provide all resources available to GRIC regarding near-roadway health impacts and land-use planning and zoning recommendations for lands adjacent to a new highway.
- Should additional alignment alternatives on GRIC land become feasible as a result of tribal approval, these alternatives should be studied in detail and all impacts disclosed in the supplemental DEIS.

Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs each Federal agency to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations

and low-income populations.[5] There is a growing body of evidence that low-income and minority communities are more vulnerable to pollution impacts than other communities, including deficits of both a physical and social nature that make the effects of environmental pollution more burdensome.[6] Environmental justice concerns may arise from the potential human health, ecological, social, cultural, and economic impacts associated with a proposed project. According to the DEIS (page 4-167), the communities within the study area have a much higher minority composition (68%) compared to Maricopa County (41%). The DEIS states that all action alternatives would have direct but not disproportionate impacts on populations with environmental justice characteristics (see page 4-175), but this appears to be a premature and unsupported conclusion. The current analysis does not consider the full suite of potential impacts from the proposed project and how these impacts may disproportionately affect minority, low-income, and indigenous populations. The environmental justice analysis in the DEIS focuses mainly on relocations and displacements. The environmental justice analysis should reference air quality, noise, and other potential project impacts to communities living near the proposed alignments.

Recommendations:

- Identify and document all environmental and human health impacts that may have a disproportionately high impact on minority populations, low-income populations, and/or indigenous populations. The environmental justice analysis should evaluate the direct, indirect, and cumulative impacts of each project alternative to these populations, and identify whether there may be disproportionately high and adverse human health or environmental effects. The analysis should incorporate relevant demographic, socioeconomic, environmental and health data, if available, to fully understand potential project impacts.
- Evaluate the localized impacts from the construction and operation of each project alternative and how these impacts affect minority, low-income, and indigenous communities located near proposed project alignments. Communities that are closer to the proposed project alignments are at a higher risk of near-roadway exposure. Near-roadway exposure to air pollution is linked to a variety of adverse health outcomes including asthma and adverse birth and childhood outcomes.[7]
- Identify appropriate mitigation measures to reduce or eliminate any adverse impacts to minority, low-income and indigenous populations throughout the project's construction and operation. Clearly identify project alternatives with the least impact to these populations.
- Mitigation measures should be developed through open, collaborative processes that include the public and affected communities. Identifying mitigation measures responsive to community concerns and supported by affected communities could further protect these communities from any disproportionate and adverse impacts.

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5 http://www.archives.gov/federal-register/executive-orders/pdf/12898.pdf

6 EPA Symposium on the Science of Disproportionate Environmental Health Impacts, March 17 - 19, 2010. The fourteen scientific reviews commissioned by EPA and published in the American Journal of Public Health are listed on EPA's website: http://epa.gov/ncer/events/news/2011/10_25b_11_feature.html. The commissioned papers were published in the American Journal of Public Health in December 2011: http://ajph.aphapublications.org/toc/ajph/101/S1. See also EPA's Framework for Cumulative Risk Assessment: http://www.epa.gov/raf/publications/pdfs/frmwrk_cum_risk_assmnt.pdf

7 Padmanabhan, N. & Glenn, B. August 2009. *EPA Research Focus on Health Effects of Near-Roadway Air Pollution.* Air and Waste Management Association, EM Magazine. Available at http://www.epa.gov/ord/ca/pdf/2009padmanabhan.pdf

Impacts to Aquatic Resources

All of the Western Section alternatives involve placing a roadway bridge over the Salt River and the construction of piers in the channel, with stated impacts varying from 17 to 26 acres depending on which alternative is chosen. The Salt River channel functions as a surface water conveyance system and provides attenuation of flood flows, as well as sediment and nutrient retention from discharge flows, thus serving a valuable water quality function. The Eastern Section alternative involves potential filling of 51 ephemeral washes that originate in the Phoenix South Mountain Park and drain to the south or west, with a potential hydrological connection to the Gila River. Ephemeral washes perform a diversity of hydrologic and biogeochemical functions that directly affect the integrity and functional condition of higher-order waters downstream. Washes provide hydrologic connectivity within the watershed, facilitating the movement of water, sediment, nutrients, wildlife, and plant propagules throughout the watershed. Washes are responsible for a large portion of basin ground-water recharge in arid and semi-arid regions through channel infiltration and transmission losses. These ephemeral systems contribute to the biogeochemical functions of waters within their watershed by storing, cycling, transforming, and transporting elements and compounds. Ephemeral washes also provide habitat for breeding, shelter, foraging and movement of wildlife.[8]

The DEIS does not provide sufficient information to determine accurate impacts to aquatic resources. Acreage of waters impacted appears to be estimated and not accurately delineated. While the DEIS states that all waters were determined to be jurisdictional in 2003, a current jurisdictional determination by the U.S. Army Corps of Engineers (Corps) has not been made. Furthermore, the DEIS does not provide an estimate of the indirect effects to waters that may result from the proposed project. The project proposes to alter the natural surface hydrology though the construction of detention basins and diversions around the freeway to convey and store stormwater originating upgradient of the freeway as well as from the freeway itself. The elimination of minor washes on the northern side of the freeway will likely result in additional lost acreage of waters to the south. Other potential indirect effects include: 1) changes to hydrology; 2) changes to sediment transport; 3) decreases in water quality/quantity from the impairment of floodplain and ecosystem services including water filtration, groundwater recharge, and flood attenuation; 4) disruption of hydrological and ecological connectivity; 5) loss of wildlife and plant habitat due to the consolidation and elimination of washes; and 5) decreases in biodiversity and ecosystem stability.

Clean Water Act Compliance

The basic premise of the Clean Water Act Section 404 permitting program is that no discharge of dredged or fill material into waters of the United States shall be permitted if (1) a practicable alternative exists that is less damaging to the aquatic environment, or (2) the discharge would cause the nation's waters to be significantly degraded (40 CFR 230). When applying for a Section 404 permit, the applicant must demonstrate that the proposed action is the least environmentally damaging practicable alternative (LEDPA), while also not causing or contributing to significant degradation of the aquatic ecosystem.

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8 See Levick, L., J. Fonseca, D. Goodrich, M. Hernandez, D. Semmens, J. Stromberg, R. Leidy,M. Scianni, D. P. Guertin, M. Tluczek, and W. Kepner. 2008. *The Ecological and Hydrological Significance of Ephemeral and Intermittent Streams in the Arid and Semi-arid American Southwest*. U.S. EPA and USDA/ARS Southwest Watershed Research Center, EPA/600/R-08/134, ARS/233046, 116 pp.

As described in the DEIS, the preferred alternative, W59, impacts 26 acres of the Salt River Channel, as compared with 19 acres and 17 acres for the other two alternatives. The DEIS states that the W59 alternative will ultimately have minimal impacts to waters since it involves placing only bridge piers in the river channel. However, the DEIS does not evaluate the specific impacts under each alternative or demonstrate how the preferred alternative, despite having a greater acreage of impacts, is the LEDPA. Additionally, the current alternative analysis does not address the impacts to the functional values of waters that would be impacted under each alternative, and does not include an analysis of design crossings (e.g., bridges and culverts) to address avoidance and minimization of impacts.

Recommendations:

- Include the findings of a Corps of Engineers' verified jurisdictional delineation for the proposed project.
- Include an alternatives analysis which demonstrates that the preferred alternative is the least environmentally damaging practicable alternative, including an analysis of indirect impacts to waters.
- Include a functional assessment of impacted waters for each alternative, discuss how those functions will be impacted, and explore mitigation measures to maintain functions.
- Provide hydrological modeling to demonstrate that downstream flows will not be disrupted due to proposed changes to any natural washes, or the excavation of large amounts of sediment.
- Provide a comprehensive discussion of mitigation measures, including:
    - A description of how impacts will be avoided or minimized.
    - Consideration of a commitment to maintain natural washes, in their present location and natural form and including adequate natural buffers, to the maximum extent practicable.
    - An analysis of avoidance and minimization options for each alternative, such as the use of bridges and soft bottom culverts.
    - A mitigation plan to compensate for any unavoidable impacts to waters of the United States.

<u>Wildlife Habitat and Connectivity</u>

The DEIS recognizes that there is growing support for maintaining habitat connectivity as it pertains to wildlife movement, and notes that significant work has already been completed in Arizona to identify essential landscape linkages for wildlife. The DEIS identifies the Salt River, as well as the area between South Mountain and the Sierra Estrella Mountains, as potentially important linkage areas for wildlife movement in the project area. The DEIS further acknowledges that the proposed freeway would cross the Salt River in an area proposed for future habitat restoration. This restoration project, known as the Rio Salado Oeste project, is a major river restoration project that would result in a continuous riparian corridor, connecting riparian and wetland habitats downstream with similar areas upstream. Currently, riparian areas in this stretch of the river are limited, and include the adjacent Pee Posh wetlands bald eagle breeding area, as well as several gravel pit ponds. The DEIS does not clearly demonstrate how the project alternatives could adversely affect these wildlife corridors and proposed restoration activities, or how impacts to these features will be addressed. Further, the DEIS provides little discussion of the many opportunities for the project to enhance habitat connectivity in the project area through the use of wildlife overcrossings, exclusionary fencing, and other design commitments that have been successful in facilitating the safe movement of wildlife across other Arizona roadway projects. This is particularly important in light of the projects proposal to cut through multiple

ridgelines of South Mountain in an area known to be the last remaining connection for wildlife to move between South Mountain and the Sierra Estrella Mountains.

Recommendations:

- Provide additional qualitative information on any unavoidable impacts to wildlife movement corridors and proposed restoration activities in the Salt River.
- Document coordination with Fish and Wildlife Service and Arizona Department of Game and Fish regarding appropriate avoidance, wildlife crossings, and mitigation measures to address these impacts.
- Include specific design commitments that: 1) remove wildlife movement barriers; 2) enhance use of identified wildlife corridors; and 3) provide crossings with suitable habitat and topography to accommodate multiple species.
- Describe specific project elements that would be constructed to enable wildlife connectivity, including types of features and approximate locations.
- Commit to replacing any riparian and wetland habitat anticipated to be lost as a result of this project prior to project construction in order to avoid impacting occupancy and productivity of the adjacent Pee Posh bald eagle breeding area.
- Provide further details regarding how stormwater runoff from the proposed freeway could be used in irrigating future restoration projects.