



## 7 SUMMARY OF MITIGATION AND TIER 2 ANALYSIS

This chapter inventories mitigation commitments and Tier 2 analysis for the I-11 Project per **Section 3.3** to **Section 3.17** and **Chapter 4** (Preliminary Final Section 4(f) Evaluation) of this Final Tier 1 EIS.

ADOT assumed FHWA responsibility for carrying out environmental approvals under NEPA through a Memorandum of Understanding between FHWA and ADOT signed on April 16, 2019 (FHWA and ADOT 2019). With this assignment of federal environmental review responsibility, ADOT will be responsible for Tier 2 studies and implementation of mitigation. FHWA remains the federal lead agency responsible for the Record of Decision for the I-11 Corridor Tier I EIS.

FHWA and ADOT completed the analysis in this Final Tier 1 EIS to identify a 2,000-foot-wide preferred Build Corridor Alternative. Additional analysis in Tier 2 will inform (1) the selection of a specific alignment (approximately 400 feet wide) within the selected 2,000-foot-wide corridor and (2) the selection of the west option or east option in Pima County.

As required by NEPA, FHWA and ADOT considered measures to avoid, minimize, and mitigate impacts from the Project (generally referred to as mitigation measures) during this Tier 1 process. Additional studies and identification of mitigation will occur in Tier 2.

The following describes how the Project Team inventoried mitigation and Tier 2 analysis:

- **Tier 2 Analysis** represents further analyses and studies that ADOT will complete during Tier 2. Each commitment is numbered by resource with a 'T2' identifier. *Example: T2-Land Use-1.*
- **Mitigation Commitments** identify specific mitigation that ADOT is committing to implement as mitigation for the I-11 Project if a Build Alternative is selected. Each commitment is numbered by resource with an 'MM' identifier. *Example: MM-Recreation-3.*
- **Inventory.** Mitigation and Tier 2 commitments are inventoried in a matrix, shown in **Table 7-1**, which includes a description of the applicable geography. This information also is stored in a sortable spreadsheet in the Administrative Record to facilitate ease of compliance in Tier 2.
- **Additional Mitigation to be Evaluated in Tier 2** represents general best practices, permit requirements, and/or other mitigation strategies suggested by agencies or the public. These can be found in **Section 3.2** to **Section 3.17** and are not repeated in this chapter.
- The **No Build Alternative** would not require mitigation and therefore is not discussed.



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**Table 7-1. Mitigation and Tier 2 Commitments**

Number	Commitment	Type	Geography
T2-LandUse-1	Conduct environmental studies to identify specific effects to property, zoning regulations, neighborhoods, or community facilities to determine needed acquisitions, easements, and displacements.	Analysis	Corridor-Wide
T2-LandUse-2	Complete a Final Section 6(f) Evaluation to assess the ability of the Tier 2 Selected Alternative to avoid or minimize impacts to protected properties and identify specific mitigation measures to offset the remaining impacts.	Analysis	Corridor-Wide
T2-LandUse-3	Plan the specific alignment and locations of traffic interchanges in coordination with local government entities and with public input to address transportation needs and to minimize the potential for land use conflicts. Also see MM-Section 4(f)-7.	Analysis	Corridor-Wide
MM-LandUse-1	Avoid or minimize impacts to Section 6(f) properties. Coordinate with agencies that have jurisdiction over Section 6(f) properties. If Section 6(f) properties cannot be avoided, ADOT will identify replacement land.	Mitigation	Corridor-Wide
T2-Recreation-1	Coordinate with the appropriate land-managing agencies during the Tier 2 analysis to identify applicable laws, policies, and plans for each recreation site.	Analysis	Corridor-Wide
T2-Recreation-2	Coordinate with Bureau of Land Management when advancing transportation uses in the multi-use corridor within the Vulture Mine Recreation Management Zone.	Analysis	Buckeye to Wickenburg
T2-Recreation-3	Update the list of recreational resources within the project-level Study Area and identify the temporary and permanent impacts to each resource.	Analysis	Corridor-Wide
T2-Recreation-4	Review recreation planning documents applicable to the Study Area.	Analysis	Corridor-Wide
T2-Recreation-5	Identify site-specific mitigation measures at recreation resources.	Analysis	Corridor-Wide
MM-Recreation-1	Provide connectivity across I-11 for continued use of the Vulture Mine Off-Road Challenge Race Course in the Vulture Mine Recreation Management Zone.	Mitigation	Buckeye to Wickenburg
MM-Recreation-2	If the Preferred Alternative with west option is selected during Tier 2 studies, address updated access routes to Saguaro National Park and Tucson Mountain Park due to the relocation of Sandario Road on either end of the Tucson Mitigation Corridor as part of the Central Arizona Project Design Option.	Mitigation	Sahuarita to Marana
MM-Recreation-3	Evaluate connection between the two segments of the Palo Verde Regional Park in western Pinal County.	Mitigation	Casa Grande to Buckeye



Number	Commitment	Type	Geography
T2-Community Resources, Title VI, and Environmental Justice-1	Develop a Public Involvement Plan consistent with ADOT's agency-wide Public Involvement Plan (ADOT 2017n), which meets federal requirements for Title VI, Environmental Justice, and limited English proficiency in the transportation decision-making process. The public involvement plan will be developed early in the planning process with the focus of ensuring full and fair participation by all affected communities and populations. Coordination with local stakeholders and community representatives may be needed to understand the unique needs and priorities of those affected by the project, as well as determine the most effective means of engaging them in the outreach process.	Analysis	Corridor-Wide
T2-Community Resources, Title VI, and Environmental Justice-2	Identify and quantify impacts and mitigation measures to address adverse impacts to minority and low-income populations. Characterization of the demographics for affected communities would be conducted using the most recent census data and supplemental characterization techniques. The impact analysis would determine whether there are disproportionately high and adverse effects to the minority and/or low-income populations.	Analysis	Corridor-Wide
T2-Community Resources, Title VI, and Environmental Justice-3	Address environmental justice in accordance with the principles outlined in Executive Order 12898 and FHWA Order 6640.23A (FHWA 2012a). The analysis should include the following items, as established by the FHWA "Guidance on Environmental Justice and NEPA" (FHWA 2011a): Conduct major, proactive efforts to ensure meaningful opportunities for public participation, including activities to increase participation from low-income and minority populations; Compare the project effects (including indirect and cumulative effects) on minority and low-income populations with respect to those on the overall population. Fair distribution of the beneficial and adverse effects of the Project is the desired outcome; Determine whether the adverse effects are predominantly borne by the minority and low-income populations or are appreciably more severe or greater in magnitude on these populations than the adverse effects suffered by the non-minority and non-low-income populations (i.e., disproportionately high and adverse effects); Determine whether the Project might prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations; Determine whether there are practicable mitigation measures or alignment alternatives that would avoid or minimize the disproportionately high and adverse effect(s); Determine whether any of the affected communities include minorities, ethnic groups, senior populations, persons with disabilities, individuals with a low-income, or those who are limited English proficient.	Analysis	Corridor-Wide



Number	Commitment	Type	Geography
T2-Economic-1	Use an updated travel demand model that delineates population and employment projections combined with an assessment of planned/entitled private developments to determine locations most suitable for ensuring transportation system safety and mobility.	Analysis	Corridor-Wide
T2-Economic-2	Use a more detailed alignment to analyze impacts related to businesses (including loss of access).	Analysis	Corridor-Wide
T2-Economic-3	Evaluate impacts on outdoor recreation and the overall regional economy by using recent, relevant outdoor recreation data such as the Outdoor Recreation Satellite Accounts. The Outdoor Recreation Satellite Accounts use tracker surveys to collect information on visitor spending, on attractions that generate tourist visits, and on how the alternatives might affect tourists' decisions.	Analysis	Corridor-Wide
MM-Economic-1	Locate traffic interchanges to provide transportation access to state lands and other developable areas while balancing convenient access with potential impacts on parks and outdoor tourism destinations as a result of the added interchanges.	Mitigation	Corridor-Wide
MM-Economic-2	Participate in continued, long-term planning efforts with metropolitan planning organizations, local jurisdictions, resource agencies, and private stakeholders to cooperatively plan development along the I-11 corridor. The effort would coordinate wildlife connectivity, local land use planning, and context sensitive design for the I-11 facility. Details regarding long-term planning efforts are dependent on the planning process for each individual organization, jurisdiction, and/or agency. ADOT commits to participating in these efforts but does not have the jurisdiction to lead them (MM-Indirect-1).	Mitigation	Corridor-Wide
T2-Cultural-1	Collect additional information to further evaluate the west and east options of the Preferred Alternative in Pima County and arrange for cultural resource surveys to inventory and evaluate the NRHP eligibility of cultural resources within the area of potential effects of each Tier 2 project, in coordination with the Section 106 Consulting Parties and pursuant to the I-11 Final Programmatic Agreement (Appendix E7 [Section 106 Consultation Summary and Programmatic Agreement])the requirements of Section 106 of the National Historic Preservation Act, any other applicable regulations, and any executed agreement documents. This will include, as necessary and upon request from Consulting Tribes, additional ethnographic and/or traditional cultural property studies.	Analysis	Corridor-Wide



Number	Commitment	Type	Geography
MM-Cultural-1	Implement commitments identified during the Tier 1 process; the commitments in the I-11 Final Programmatic Agreement (Appendix E7 [Section 106 Consultation Summary and Programmatic Agreement]), if executed; and any additional commitments from the Tier 2 process. During the Tier 1 process, ADOT has committed to the avoidance of adverse effects upon AZ T:14:115(ASM). ADOT has also committed to the avoidance of adverse effects upon historic canals which have been or may be determined eligible for listing in the NRHP pursuant to 36 CFR §§ 60.4(a), (b), and/or (c); and in such instances as the consulting party or parties with jurisdiction over said structures request avoidance.	Mitigation	Corridor-Wide
MM-Cultural-2	Work to avoid or minimize adverse effects on historic properties listed in or eligible for the NRHP, including traditional cultural properties, as well as cultural resources not yet evaluated for NRHP eligibility. In coordination with the Section 106 Consulting Parties, ADOT would develop treatment measures to mitigate any unavoidable adverse effects. This will include, as necessary and upon request from Consulting Tribes, additional ethnographic and/or traditional cultural property studies.	Mitigation	Corridor-Wide
T2-Noise-1	Conduct a Tier 2 traffic noise analysis in accordance with the current ADOT Noise Abatement Requirements as well as 23 CFR 772. The Tier 2 analysis will include conducting noise measurements to characterize the existing noise environment in areas adjacent to segments of I-11 that consist of a new highway on new alignment where a substantial noise increase (a 15 dBA increase over existing noise levels) would be likely. Noise abatement measures will be considered where traffic noise impacts are identified, and abatement measures found to be both feasible and reasonable will be incorporated into the project.	Analysis	Corridor-Wide
T2-Noise-2	Evaluate potential construction noise impacts and assess construction noise mitigation, as needed and in accordance with current ADOT Noise Abatement Requirements. ADOT will determine whether any additional measures are needed in the plans or specifications to minimize or eliminate adverse impacts from construction noise.	Analysis	Corridor-Wide
MM-Noise-1	Consider noise abatement measures where traffic noise impacts are identified during Tier 2 analysis. Abatement measures found to be both feasible and reasonable will be incorporated into the project.	Mitigation	Corridor-Wide



Number	Commitment	Type	Geography
T2-Visual-1	Assess individual Tier 2 projects using FHWA's Visual Impact Assessment Scoping Questionnaire (FHWA 2015). Depending on the findings of the questionnaire, an Abbreviated Visual Impact Assessment may be needed, or a more involved Standard or Expanded Visual Impact Assessment may be required. Simulations may also be prepared to assist with evaluating potential visual impacts.	Analysis	Corridor-Wide
T2-Visual-2	Identify site-specific mitigation measures for sensitive viewpoints, including Saguaro National Park West and Tucson Mountain Park.	Analysis	Corridor-Wide
MM-Visual-1	Comply with applicable local ordinances that regulate outdoor lighting to minimize light pollution.	Mitigation	Corridor-Wide
MM-Visual-2	Comply with appropriate level of FHWA Visual Impact Assessment Guidelines (FHWA 2015) during Tier 2 studies.	Mitigation	Corridor-Wide
MM-Visual-3	Select roadway lighting that is compatible with locally adopted dark sky objectives and policies, where applicable.	Mitigation	Corridor-Wide
MM-Visual-4	If the Preferred Alternative with west option is selected during Tier 2 studies, avoid use of roadway lighting at all in the vicinity of the Tucson Mitigation Corridor and Saguaro National Park, except at locations where safety requirements deem it necessary.	Mitigation	Sahuarita to Marana
T2-Air Quality-1	Conduct a detailed air quality analysis for further environmental evaluation. Transportation conformity analysis could be required based on the nonattainment and maintenance designations of the areas surrounding the Study Area. Attainment status for the applicable areas will be re-evaluated during Tier 2 analysis.	Analysis	Corridor-Wide
T2-Air Quality-2	Assess vehicle emissions along the I-11 Corridor. Modeling of carbon monoxide and particulate matter at the project level will be conducted to determine potential localized air quality effects (hotspots) from future construction and operation of the I-11 Corridor.	Analysis	Corridor-Wide
T2-Air Quality-3	Quantitatively assess greenhouse gas emissions using USEPA's Motor Vehicles Emissions Simulator (MOVES) model or the model in place at the time of Tier 2 analyses.	Analysis	Corridor-Wide





Number	Commitment	Type	Geography
T2-Air Quality-4	Conduct an analysis of localized air quality impacts to sensitive areas, including the Saguaro National Park. The analysis will assess National Ambient Air Quality Standards and criteria pollutants and will consider the spacing of interchanges and associated idling impacts on adjacent receptors. ADOT will provide the opportunity for NPS to review the air quality emission inventory and modeling protocols.	Analysis	Corridor-Wide
T2-HazardousMaterials-1	Conduct detailed hazardous materials evaluations, including review of regulatory agency files; subsurface investigations to quantify the vertical and horizontal distribution of hazardous materials; and remediation planning as needed.	Analysis	Corridor-Wide
T2-HazardousMaterials-2	Evaluate engineering solutions to contain spills in areas that have a high potential to impact sensitive receptors, including water resources, groundwater recharge areas, wildlife habitat, and recreation resources.	Analysis	Corridor-Wide
MM-HazardousMaterials-1	Prior to construction, prepare and implement a project-specific Health and Safety Plan and Hazardous Materials Management Plan to address potential hazardous materials that could be encountered. These plans will consist of specific measures to protect worker and public health and safety, as well as programs to manage contaminated materials during construction.	Mitigation	Corridor-Wide
MM-HazardousMaterials-2	If unknown contaminated media is encountered during construction, stop working until the contamination is properly evaluated and measures are developed to protect worker health and safety in accordance with the project-specific Health and Safety Plan and Hazardous Materials Management Plan.	Mitigation	Corridor-Wide
MM-HazardousMaterials-3	Identify practical measures to avoid, minimize, and mitigate the environmental consequences from hazardous materials.	Mitigation	Corridor-Wide
MM-HazardousMaterials-4	Implement preparedness plans, such as the Arizona State Emergency Response and Recovery Plan (Arizona Department of Emergency and Military Affairs 2017).	Mitigation	Corridor-Wide
T2-Soils-1	Identify and review regulations related to geologic resources based on local land ownership and the intended use.	Analysis	Corridor-Wide
T2-Soils-2	As part of design and geotechnical investigations, determine the amount of ground disturbance anticipated and factors that affect the potential for soils to erode by water and wind, including physical characteristics, slope gradient, vegetative cover, surface roughness, and rainfall or wind intensity.	Analysis	Corridor-Wide
T2-Soils-3	Evaluate existence and status of mining claims and active mining operations.	Analysis	Corridor-Wide





Number	Commitment	Type	Geography
T2-Soils-4	Identify and determine the extent of impacts to specific geologic, soil, and farmland resources.	Analysis	Corridor-Wide
T2-Soils-5	Conduct site-specific field investigations during design to validate interpretations and confirm soil characteristics.	Analysis	Corridor-Wide
T2-Soils-6	Collect any additional or refined data (Natural Resources Conservation Service, United States Geological Survey, or other sources) on geotechnical conditions that could affect design and performance such as shrink/swell, compression/collapse, and corrosion potential.	Analysis	Corridor-Wide
T2-Soils-7	Identify the number of irrigated acres for refinement of potential prime or unique farmland impacts through Natural Resources Conservation Service completion of United States Department of Agriculture Form AD-1006 (Farmland Conversion Impact Rating form).	Analysis	Corridor-Wide
T2-Soils-8	Identify areas of current and planned development that should be removed from prime and unique farmland categorization through the analysis of local land use and zoning maps.	Analysis	Corridor-Wide
MM-Soils-1	Monitor disturbance and erosion areas during construction and through restoration.	Mitigation	Corridor-Wide
MM-Soils-2	Avoid known land subsidence areas when feasible.	Mitigation	Corridor-Wide
MM-Soils-3	Avoid known earth fissures when feasible.	Mitigation	Corridor-Wide
MM-Soils-4	Develop and implement a reclamation and revegetation plan.	Mitigation	Corridor-Wide
MM-Soils-5	Coordinate with Natural Resources Conservation Service as part of compliance with the Farmland Protection Policy Act.	Mitigation	Corridor-Wide
T2-Water Resources-1	Coordinate with USEPA regarding proposed construction within sole source aquifers.	Analysis	Sahuarita to Marana
T2-Water Resources-2	Conduct field delineations of potential waters of the US and wetlands within the final project footprint, determine which potential waters of the US and wetlands are jurisdictional under the USACE definition, and identify specific Clean Water Act permitting requirements and mitigation. Tier 2 analyses will consider the requirement that no discharge of dredged or fill materials may be permitted if there is a practicable alternative that would have less adverse impact on the aquatic ecosystem.	Analysis	Corridor-Wide



Number	Commitment	Type	Geography
T2-Water Resources-3	Provide clear documentation of the Tier 1 alternatives analyses and selection process to inform the Clean Water Act Section 404 permitting process. Conduct an alternative analysis and selection process for Tier 2 alternatives in support of Clean Water Act Section 404 Individual Permit applications and per the requirements of Executive Order 11990.	Analysis	Corridor-Wide
T2-Water Resources-4	Assess which MS4 applies in which area, and whether any small operators (Phase II MS4s) are located within the Tier 2 study area.	Analysis	Corridor-Wide
T2-Water Resources-5	Identify USACE civil works projects that may be altered by project construction and obtain USACE approval prior to alteration of such projects as required by Section 14 of the Rivers and Harbors Act.	Analysis	Corridor-Wide
T2-Water Resources-6	Identify and assess project effects to unmapped floodplains, levees, and flood control basins that may be altered by project construction. Provide flood control districts and jurisdictions the opportunity to provide information regarding unmapped floodplains, levees, and flood control basins.	Analysis	Corridor-Wide
T2-Water Resources-7	Conduct hydraulic computer modeling or other assessments of impacts on floodplains. Coordinate with local floodplain administrators to discuss the need for Floodplain Use Permits and mitigation. Assess impacts on high-hazard flood areas versus low-hazard (500-year-flood zone) areas and assess floodplain areas that have not been categorized in more detail; additional information sources such as Pima County's mapped regulatory riparian resources may be used to inform this analysis. Assess existing floodplain issues and potential solutions. An avoidance alternative outside of the 2,000-foot-wide corridor may be considered.	Analysis	Corridor-Wide
MM-Water Resources-1	Develop location-specific avoidance, minimization, and mitigation measures for water resources. Avoid and minimize impacts on waters of the US, including wetlands, to the maximum extent practicable.	Mitigation	Corridor-Wide



Number	Commitment	Type	Geography
MM-Water Resources-2	Incorporate best management practices designed to reduce erosion, minimize sedimentation, and eliminate non-stormwater pollutants into the project design. Standard best management practices are identified in ADOT's Erosion and Pollution Control Manual for Highway Design and Construction (2012) and ADOT's Standard Specifications for Road and Bridge Construction (2008). The most recent versions of these design standards will apply during Tier 2 analysis. Among others, restrictions and requirements that will be incorporated during construction include the following: Wastewater will be contained and disposed of at an approved off-site location; No equipment refueling will occur within drainages; The contractor will keep a regulated work area free of litter and trash; The contractor will remove all construction material and debris from the construction site upon completion of the project.	Mitigation	Corridor-Wide
MM-Water Resources-3	Site the final corridor footprint to avoid sensitive water resources to the maximum extent practicable. Examples of resources that could be avoided through strategic footprint siting include the Tres Rios Water Reclamation Facility, Sweetwater Wetlands Park, certain segments of the Santa Cruz River, and the Nogales International Wastewater Treatment Plant, among others.	Mitigation	Corridor-Wide
MM-Water Resources-4	Comply with federal, state, and local regulations pertaining to water resources and acquire the necessary permits and approvals prior to project construction.	Mitigation	Corridor-Wide
MM-Water Resources-5	Coordinate with federal, state, and local jurisdictions as appropriate to identify water resources of concern and to develop strategies to avoid and minimize impacts.	Mitigation	Corridor-Wide
T2-Biological Resources-1	Continue to work with AGFD to determine compensation for the loss of wildlife habitat. Also continue to work with agencies prior to and during the Tier 2 process to conduct surveys needed to identify occupied habitat for ESA-listed species at the time of the Tier 2 project and to develop specific conservation measures to avoid, minimize, or mitigate impacts to listed species.	Analysis	Corridor-Wide
T2-Biological Resources-2	Continue to work with federal and state agencies as well as affected municipalities during the Tier 2 process to evaluate potential impacts to other sensitive species listed by these entities. Work with tribes during the Tier 2 process to avoid or minimize effects to tribal sensitive species.	Analysis	Corridor-Wide



Number	Commitment	Type	Geography
T2-Biological Resources-3	Continue to work with AGFD and other stakeholders and partners prior to and during the Tier 2 process to develop and fund appropriate studies to evaluate wildlife movement and roadway mortality. Sufficient time (at least 2 to 4 years) will be given to ensure the studies acquire adequate data for guiding the development of mitigation measures. Tier 2 impact analyses will focus on refining information relating to specific impact areas within known wildlife linkages and corridors identified now and in the future.	Analysis	Corridor-Wide
T2-Biological Resources-4	Conduct tracking studies using camera traps, satellite telemetry, track plates, or other methods to identify spatial and temporal use patterns of target species within the Study Area. These tracking studies, as well as collision studies, will be utilized to identify sites where overpasses or underpasses could be installed. ADOT will implement on-the-ground mitigation based on recommendations generated by these studies, such as constructing wildlife crossings where previous crossings by wildlife have been documented and building culverts of a specific size and design for wildlife occurring in specific locations in the Study Area. Also existing culverts, bridges, and other roadway features that are in place along co-located highways will be monitored to identify the species that use these and the degree to which these existing features are effective at maintaining movement across the highway barriers.	Analysis	Corridor-Wide
T2-Biological Resources-5	Prepare biological evaluation for the Tier 2 studies and negotiate compensatory mitigation with USFWS if impacts to Endangered Species Act-listed species or habitat are determined likely to occur.	Analysis	Corridor-Wide
T2-Biological Resources-6	Analyze impacts from the Preferred Alternative with west option to Pima County Conservation Lands System lands and coordinate with Pima County to minimize potential impacts and identify appropriate mitigation strategies.	Analysis	Sahuarita to Marana
T2-Biological Resources-7	Partner with state and federal agencies during the Tier 2 design process and use data obtained from habitat suitability studies to inform design features to minimize impacts to the Sonoran desert tortoise and its habitat.	Analysis	Corridor-Wide
T2-Biological Resources-8	Continue to work with federal and state agencies as well as affected municipalities during the Tier 2 process to evaluate potential impacts to other wildlife corridors designated by these entities and not evaluated in detail in this Tier 1 EIS.	Analysis	Corridor-Wide



Number	Commitment	Type	Geography
MM-Biological Resources-1	Participate, support, and commit to long-term invasive and noxious weed management efforts in the I-11 corridor. To effectively combat noxious and invasive weeds, a coordinated effort across federal, state, and local levels is required. Noxious and invasive weed control on Bureau of Land Management or USFS lands would occur in accordance with previously approved environmental assessments. Long-term management of invasive and noxious weeds would be necessary to minimize indirect and cumulative effects to the Pima pineapple cactus and its habitat.	Mitigation	Corridor-Wide
MM-Biological Resources-2	Notify the Arizona Department of Agriculture prior to the start of construction, if needed, to compensate for impacts to native plants.	Mitigation	Corridor-Wide
MM-Biological Resources-3	Discuss the need for habitat compensation with AGFD during the Tier 2 process. Arizona Game and Fish Commission Policy A1.9 and Department Policy 12.3 (AGFD 1994) state the Department shall seek compensation at a 100 percent level, when feasible, for actual or potential habitat losses resulting from land and water projects.	Mitigation	Corridor-Wide
MM-Biological Resources-4	Coordinate with AGFD and relevant agencies and stakeholders to determine wildlife connectivity data needs and study design. ADOT will then fund and facilitate implementation of identified studies prior to the initiation of the Tier 2 process, due to the timeline required (likely 2 to 4 years) to collect and analyze sufficient data before draft design plans begin to limit the mitigation measures possible. ADOT and the stakeholders will identify the crossing structures, design features, and supporting mitigation measure or conservation necessary to facilitate the movement of wildlife through the roadway barrier and will incorporate the solutions into subsequent I-11 projects.	Mitigation	Corridor-Wide
MM-Biological Resources-5	Establish partnering opportunities with key landowners (e.g., private, BLM, Bureau of Reclamation, Maricopa County, Pinal County, Pima County, and Santa Cruz County) and appropriate municipal, county, state, and federal agencies prior to and during the Tier 2 process for long-term planning strategies.	Mitigation	Corridor-Wide
MM-Biological Resources-6	Evaluate the Wildlife Connectivity Assessment reports from Pima, Pinal, Maricopa, Santa Cruz, and Yavapai Counties to identify and, if possible, avoid I-11 impacts on the diffuse, landscape, and riparian wildlife movement areas identified in each report prior to the Tier 2 analysis.	Mitigation	Corridor-Wide
MM-Biological Resources-7	Evaluate structures designed to enhance wildlife connectivity, such as wildlife overpasses and underpasses, and fencing to funnel wildlife to these structures in association with AGFD and relevant agencies and stakeholders.	Mitigation	Corridor-Wide



Number	Commitment	Type	Geography
MM-Biological Resources-8	Avoid or minimize impacts to designated or proposed critical habitat. If impacts to critical habitat cannot be avoided, consultation with USFWS will occur during the Tier 2 analysis.	Mitigation	Corridor-Wide
MM-Biological Resources-9	Conduct a thorough habitat assessment in all areas that have potential habitat for Endangered Species Act-listed species for the section being studied prior to the Tier 2 process. If suitable habitat occurs within the construction footprint, ADOT will avoid or minimize impacts. Additionally, pre-construction surveys will be completed for all Endangered Species Act-listed species, or it will be assumed that the species occurs on-site. For the southwestern willow flycatcher, western yellow-billed cuckoo, and Yuma Ridgway's rail, 2 years of breeding season surveys will be conducted prior to the Tier 2 process.	Mitigation	Corridor-Wide
MM-Biological Resources-10	Continue to honor commitments within the Candidate Conservation Agreement for the Sonoran desert tortoise in Arizona (USFWS 2015a).	Mitigation	Corridor-Wide
MM-Biological Resources-11	Conduct habitat suitability surveys within agency-mapped tortoise habitat that may be impacted by the I-11 section being considered prior to the Tier 2 process.	Mitigation	Corridor-Wide
MM-Biological Resources-12	Follow ADOT's existing mitigation strategies for any future I-11 segments selected for construction that are located within Sonoran desert tortoise habitat. ADOT has developed comprehensive Sonoran desert tortoise mitigation that includes, but is not limited to, education of contractors and ADOT staff on tortoise awareness, pre-construction surveys, relocation of tortoises, on-site monitoring of construction activities, and best management practices designed to reduce potential tortoise mortalities during construction.	Mitigation	Corridor-Wide
MM-Biological Resources-13	Avoid widening I-19 to the east along the Santa Cruz River and impacting southwestern willow flycatcher, yellow-billed cuckoo, and their critical habitat; Gila topminnow; and Northern Mexican garter snake habitat; conduct pre-construction surveys where appropriate; and consult with USFWS, as needed (Option A).	Mitigation	Nogales to Sahuarita
MM-Biological Resources-14	Minimize the construction footprint to the extent possible and improve or construct wildlife crossings that jaguar and ocelots will use (Option A).	Mitigation	Nogales to Sahuarita
MM-Biological Resources-15	Avoid or minimize construction footprint through quality Pima pineapple cactus habitat, survey suitable habitat 1 year prior to the Tier 2 process to inform design; implement long-term control of invasive and noxious weeds; and negotiate compensatory mitigation with USFWS, as needed (Option A).	Mitigation	Nogales to Sahuarita





Number	Commitment	Type	Geography
MM-Biological Resources-16	Avoid or minimize impacts to the riparian corridor associated with the Santa Cruz River. The need for potential additional wildlife crossings would be assessed and implemented where warranted to preserve wildlife movement. Coordinate with relevant agencies to implement modifications that will enhance wildlife movement (Option A).	Mitigation	Nogales to Sahuarita
MM-Biological Resources-17	Avoid or minimize impacts to the Santa Rita-Tumacácori Linkage and Santa Rita-Sierrita Detailed Linkage. Assess whether recommendations provided in the specific or county linkage reports can be used to improve or construct wildlife crossings in these linkages. Coordinate with relevant agencies to implement modifications that will enhance wildlife movement (Option A).	Mitigation	Nogales to Sahuarita
MM-Biological Resources-18	Conduct 2 years of pre-construction surveys during the breeding season in suitable habitat for yellow-billed cuckoo; implement seasonal restrictions; and consult with USFWS, as needed (Option B or Preferred Alternative with east option). Avoid widening I-19 or I-10 into the Santa Cruz River floodplain.	Mitigation	Sahuarita to Marana
MM-Biological Resources-19	If the Preferred Alternative with east option is selected during Tier 2 studies, avoid or minimize impacts to the Santa Rita-Sierrita Detailed Linkage, Tucson-Tortolita-Santa Catalina Linkage, and Coyote-Ironwood-Tucson Detailed Linkage. Assess whether recommendations provided in the specific or county linkage reports can be used to improve and construct wildlife crossings in these linkages. Coordinate with relevant agencies to implement modifications that will enhance wildlife movement (Option B or Preferred Alternative with east option).	Mitigation	Sahuarita to Marana
MM-Biological Resources-20	Avoid or minimize construction footprint through quality Pima pineapple cactus habitat; survey suitable habitat 1 year prior to the Tier 2 process to inform design; implement long-term control of invasive and noxious weeds; and negotiate compensatory mitigation with USFWS, as needed.	Mitigation	Sahuarita to Marana
MM-Biological Resources-21	Avoid critical and occupied habitat for the Chiricahua leopard frog that occurs adjacent to the southern end of this option (Options C, D, CAP Option, I-10 Connector).	Mitigation	Sahuarita to Marana
MM-Biological Resources-22	Avoid or minimize impacts to the Santa Rita-Sierrita Detailed Linkage, Coyote-Ironwood-Tucson Detailed Linkage. Assess whether recommendations provided in the linkage-specific or county linkage reports can be used to improve and construct wildlife crossings in these linkages. Coordinate with relevant agencies to implement modifications that will enhance wildlife movement (Options C, D, CAP Option, I-10 Connector).	Mitigation	Sahuarita to Marana





Number	Commitment	Type	Geography
MM-Biological Resources-23	If the Preferred Alternative with west option is chosen during Tier 2, studies will be developed to avoid, minimize, or mitigate impacts to the Tucson Mitigation Corridor, including coordination with Bureau of Reclamation, AGFD, and other relevant agencies to improve and design wildlife crossings in and near the Tucson Mitigation Corridor. Specific mitigation related to the Tucson Mitigation Corridor includes (1) relocating and reclaiming Sandario Road; (2) conducting wildlife studies prior to the Tier 2 process; (3) aligning I-11 wildlife crossing structures to match the existing CAP canal siphons (seven crossings total); (4) creating additional wildlife crossing(s) near the Tucson Mitigation Corridor depending on the results of wildlife studies; (5) acquiring property (at a minimum 1:1 ratio) to support additional wildlife connectivity corridors between the Tucson Mountains and the Roskrige and Silver Bell Mountains for the number of acres of the Tucson Mitigation Corridor that will be impacted by the project; and (6) implementing design restrictions, such as no interchanges in the Tucson Mitigation Corridor or between Snyder Hill Road and Manville Road, and minimizing the width of I-11, to limit the I-11 footprint in the Tucson Mitigation Corridor area.	Mitigation	Sahuarita to Marana
MM-Biological Resources-24	Avoid or minimize impacts to the Santa Cruz River along this option; conduct 2 years of pre-construction breeding season surveys for yellow-billed cuckoo; implement seasonal restrictions; and consult with USFWS, as needed (Option F).	Mitigation	Marana to Casa Grande
MM-Biological Resources-25	Avoid or minimize impacts to the Coyote-Ironwood-Tucson Detailed Linkage, Ironwood-Picacho Linkage. Assess whether recommendations provided in the linkage-specific or county linkage reports can be used to improve and construct wildlife crossings in these linkages. Coordinate with relevant agencies to implement modifications that will enhance wildlife movement (Option F).	Mitigation	Marana to Casa Grande
MM-Biological Resources-26	Avoid or minimize impacts to the Ironwood-Picacho Linkage. Assess whether recommendations provided in the linkage-specific or county linkage reports can be used to improve and construct wildlife crossings in these linkages. Coordinate with relevant agencies to implement modifications that will enhance wildlife movement (Option G, not applicable to the Preferred Alternative).	Mitigation	Marana to Casa Grande
MM-Biological Resources-27	Avoid or minimize impacts to the Gila Bend-Sierra Estrella Linkage. Assess whether recommendations provided in the linkage-specific or county linkage reports can be used to improve and construct wildlife crossings in these linkages. Coordinate with relevant agencies to implement modifications that will enhance wildlife movement (Options K and L).	Mitigation	Casa Grande to Buckeye



Number	Commitment	Type	Geography
MM-Biological Resources-28	Avoid or minimize impacts to the Buckeye Hills East-Sonoran Desert National Monument Linkage. Assess whether recommendations provided in the linkage-specific or county linkage reports can be used to improve and construct wildlife crossings in these linkages. Coordinate with relevant agencies to implement modifications that will enhance wildlife movement (Option M).	Mitigation	Casa Grande to Buckeye
MM-Biological Resources-29	Minimize the footprint of the bridge crossing the Gila River to the extent possible; conduct 2 years of pre-construction breeding season surveys for yellow-billed cuckoo, southwestern willow flycatcher, and Yuma Ridgway's rail suitable habitat; implement seasonal restrictions; and consult with USFWS, as needed (Option N, not applicable to the Preferred Alternative).	Mitigation	Casa Grande to Buckeye
MM-Biological Resources-30	Avoid or minimize impacts to the Gila River riparian corridor. The need for potential additional wildlife crossings will be assessed to preserve wildlife movement. Coordination with relevant agencies would occur to implement modifications that will enhance wildlife movement (Option N, not applicable to the Preferred Alternative).	Mitigation	Casa Grande to Buckeye
MM-Biological Resources-31	Avoid or minimize impacts to the Gila Bend-Sierra Estrella Linkage. Assess whether recommendations provided in the linkage-specific or county linkage reports can be used to improve and construct wildlife crossings in these linkages. Coordinate with relevant agencies to implement modifications that will enhance wildlife movement (Option Q1, not applicable to the Preferred Alternative).	Mitigation	Casa Grande to Buckeye
MM-Biological Resources-32	Minimize the footprint of bridge widening or new bridge construction on the SR 85 crossing the Gila River to the extent possible; conduct two years of pre-construction, breeding season surveys in suitable habitat for yellow-billed cuckoo, southwestern willow flycatcher, and Yuma Ridgway's rail; implement seasonal restrictions; and consult with USFWS, if species present, as needed (Option Q2).	Mitigation	Casa Grande to Buckeye
MM-Biological Resources-33	Avoid or minimize impacts to the Gila River riparian corridor. The need for potential additional wildlife crossings will be assessed to preserve wildlife movement. Coordinate with relevant agencies to implement modifications that will enhance wildlife movement (Option Q2).	Mitigation	Casa Grande to Buckeye
MM-Biological Resources-34	Minimize construction in the Gila River floodplain to the extent possible; conduct 2 years of pre-construction, breeding season surveys in suitable habitat for yellow-billed cuckoo; implement seasonal restrictions; and consult with USFWS, if species present, as needed (Options Q3 and R).	Mitigation	Casa Grande to Buckeye



Number	Commitment	Type	Geography
MM-Biological Resources-35	Avoid, minimize, and mitigate impacts to the White Tank-Belmont Hieroglyphics Linkage, Wickenburg-Hassayampa Linkage and primary and secondary wildlife crossing structures on Reclamation's CAP canal. Assess whether recommendations provided in the linkage-specific or county linkage reports can be used to improve and construct wildlife crossings in these linkages. Coordinate with relevant agencies to implement modifications that will enhance wildlife movement (Options S, U, and X).	Mitigation	Buckeye to Wickenburg
MM-Indirect-1	Participate in continued, long-term planning efforts with metropolitan planning organizations, local jurisdictions, resource agencies, and private stakeholders to cooperatively plan development along the I-11 corridor. The effort would coordinate wildlife connectivity, local land use planning, and context sensitive design for the I-11 facility. Details regarding long-term planning efforts are dependent on the planning process for each individual organization, jurisdiction, and/or agency. ADOT commits to participating in these efforts but does not have the jurisdiction to lead them.	Mitigation	Corridor-Wide
MM-Indirect-2	If the Preferred Alternative with west option is selected during Tier 2 studies, avoid building exits or interchanges between West Snyder Hill Road and Manville Road in the area around the Tucson Mitigation Corridor in order to limit project-induced development.	Mitigation	Sahuarita to Marana
T2-Section 4(f)-1	If the Preferred Alternative east option is selected during Tier 2 studies, ADOT will examine roadway design solutions to avoid or minimize impacts to Section 4(f) properties in downtown Tucson. Examples of such solutions would include, but may not be limited to, applying minimum required roadway cross sections, and shifting the proposed roadway alignment to avoid some properties, elevating I-11 over I-10, tunneling I-11 under I-10, and removing frontage roads. The benefits and impacts of design solutions will be quantified, compared, and reported in Tier 2 analyses. Such reporting will also enable comparison of the Preferred Alternative east option findings with those of the Preferred Alternative west option in Tier 2.	Analysis	Nogales to Sahuarita
T2-Section 4(f)-2	If the Preferred Alternative east option is selected during Tier 2 studies, ADOT will develop measures to minimize harm during Tier 2 in coordination with the officials with jurisdiction over the affected properties in downtown Tucson.	Analysis	Nogales to Sahuarita
T2-Section 4(f)-3	Coordinate with Central Arizona Water Conservation District and the Bureau of Reclamation on the applicable design standards in Tier 2 studies.	Analysis	Corridor-Wide



Number	Commitment	Type	Geography
T2-Section 4(f)-4	Continue considering ways to avoid use of Section 4(f) properties through engineering design and mitigation.	Analysis	Corridor-Wide
T2-Section 4(f)-5	Evaluate the need for and effectiveness of measures to mitigate impacts to Section 4(f) properties. Types of measures to be evaluated include replacement of land and facilities of comparable value and function; compensation; restoration, preservation, interpretation, and recordation (such as for historic structures and properties); and other types of mitigation developed in coordination with the officials with jurisdiction over Section 4(f) properties.	Analysis	Corridor-Wide
T2-Section 4(f)-6	Continue coordinating with officials with jurisdiction in Tier 2 regarding potential impacts to Section 4(f) properties. Where impacts to Section 4(f) properties potentially would occur, coordination will focus on identifying appropriate and reasonable measures to minimize and mitigate impacts.	Analysis	Corridor-Wide
MM-Section 4(f)-1	Coordinate with the Bureau of Reclamation, NPS, AGFD, and Pima County regarding the Tucson Mitigation Corridor during Tier 2 studies.	Mitigation	Corridor-Wide
MM-Section 4(f)-2	Relocate and reclaim Sandario Road. If the Preferred Alternative west option (including the CAP Design Option) is chosen in Tier 2, ADOT will further study relocation of Sandario Road to coincide with the new I-11 alignment. ADOT will remove and reclaim an approximately 2-mile section of the existing road with native vegetation. The design would reduce barriers for wildlife (including the road and associated roadway fencing) while maintaining necessary local access.	Mitigation	Sahuarita to Marana
MM-Section 4(f)-3	Co-align wildlife crossings with CAP canal wildlife crossings. If the Preferred Alternative west option is chosen in Tier 2, ADOT will study placement of wildlife crossings on I-11 that align with the six existing CAP siphon crossings in the Tucson Mitigation Corridor and would place one wildlife crossing immediately north of the Tucson Mitigation Corridor (a total of seven crossings). The purpose of the I-11 wildlife crossings is to provide continuity to the existing CAP wildlife crossings (siphons) and minimize impacts to wildlife movements between the Tucson Mountains and Roskrige Mountains.	Mitigation	Sahuarita to Marana
MM-Section 4(f)-4	Provide no interchanges between West Snyder Hill Road and West Manville Road. To maximize the effectiveness of the Tucson Mitigation Corridor mitigation measures, ADOT will not build exits or interchanges on I-11 between West Snyder Hill Road and West Manville Road if the Preferred Alternative west option is chosen in Tier 2. The distance between these two roads is approximately 9 miles.	Mitigation	Sahuarita to Marana



Number	Commitment	Type	Geography
MM-Section 4(f)-5	Minimize width of I-11 in Tucson Mitigation Corridor. If the Preferred Alternative west option is chosen in Tier 2, ADOT will minimize the width of I-11 through the Tucson Mitigation Corridor using appropriate interstate design standards.	Mitigation	Sahuarita to Marana
MM-Section 4(f)-6	Partner with land use planning organizations and agencies. Understanding the potential for indirect and cumulative land use effects that could occur if the Preferred Alternative west option is chosen in Tier 2, ADOT will be an active partner in a broader effort with metropolitan planning organizations, local jurisdictions, resource agencies, and private stakeholders to cooperatively plan development in the I-11 Corridor. The effort would coordinate wildlife connectivity, local land use planning, and context-sensitive design for the I-11 facility. The White Tank Mountains Conservancy may be a model for this type of effort. Coordination with Pima County on the implementation of the Sonoran Desert Conservation Plan also could be part of the effort.	Mitigation	Sahuarita to Marana
MM-Section 4(f)-7	Apply design standards. The Bureau of Reclamation and the Central Arizona Water Conservation District have design standards for facilities that encroach on CAP lands. ADOT will comply with these standards where I-11 crosses CAP lands or is adjacent to the CAP facility.	Mitigation	Corridor-Wide
MM-Section 4(f)-8	Comply with dark skies objectives. Roadway lighting will be compatible with dark skies objectives and lighting would be limited to be consistent with land use and development patterns at the time of the I-11 Corridor implementation.	Mitigation	Corridor-Wide
MM-Section 4(f)-9	Visually screen the Project. If the Preferred Alternative west option is chosen in Tier 2, the roadway will be designed in such a way as to screen the facility from sensitive viewpoints in the area. The design will use various measures, such as vegetation, berms, and topography or partial depression of the roadway, to accomplish this. The screening also could reduce noise impacts.	Mitigation	Sahuarita to Marana



Number	Commitment	Type	Geography
MM-Section 4(f)-10	Undertake wildlife studies and create or enhance wildlife corridor(s). ADOT will coordinate with AGFD and USFWS, as recognized wildlife authorities, on determining the studies required to understand east-west wildlife movement needs (both on and off the Tucson Mitigation Corridor) between the Tucson Mountains and the Roskrige Mountains. ADOT will undertake and use the results of the wildlife studies, in consultation with AGFD, USFWS, and the Tucson Mitigation Corridor Working Group, to develop specific mitigation measures that will be incorporated into the I-11 Corridor. Mitigation measures may include creation of new or enhancement of existing wildlife corridor(s) on or outside the Tucson Mitigation Corridor property, but would be located between the Tucson Mountains to the east and the Roskrige Mountains to the west, and they would support the purpose of the Tucson Mitigation Corridor. These studies will gather baseline wildlife data, including evaluation of historical and current movement data, and surveys of existing populations. Using the baseline data, the studies will identify the extent, location, requirements, target species, and expected benefits of additional and enhanced wildlife movement corridors, supporting structures, and other mitigation measures. The wildlife studies will identify adaptive management thresholds and likely actions. ADOT will fund and facilitate the implementation of the identified wildlife studies in Tier 2 so that the results can be used to inform the I-11 Corridor design.	Mitigation	Sahuarita to Marana
MM-Section 4(f)-11	Replace or compensate for any land in the Tucson Mitigation Corridor acquired for I-11 by considering comparable value and function, restoration of land value, and preservation of land. If the Preferred Alternative west option requires acquisition of Tucson Mitigation Corridor land, ADOT will assess the feasibility of transferring land acquired for Tucson Mitigation Corridor mitigation to an entity that would protect the lands for wildlife and wildlife movement purposes. ADOT will consult with the Tucson Mitigation Corridor partners to jointly identify and agree on the appropriate entity.	Mitigation	Sahuarita to Marana
MM-Section 4(f)-12	Avoid the use of specific properties that are partially or entirely within the Build Corridor Alternatives. The properties are identified in the Preliminary Section 4(f) Evaluation and can be avoided by accommodation, shifting the corridor, or grade-separating the corridor.	Mitigation	Corridor-Wide



Number	Commitment	Type	Geography
MM-Section 4(f)-13	Commit to Tier 2 studies, during which the selected Build Corridor Alternative will be refined to a specific roadway alignment, potential impacts and uses as defined by Section 4(f) will be identified, measures to avoid or minimize impacts to Section 4(f) properties will be identified and assessed, measures to mitigate adverse impacts to Section 4(f) properties will be identified, and a Final Section 4(f) Evaluation will be completed, prior to making a final Section 4(f) approval.	Mitigation	Corridor-Wide

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