

San Antonio International Airport Strategic Development Plan

2021 AIRPORT MASTER PLAN

ENVIRONMENTAL OVERVIEW AND SUSTAINABILITY INITIATIVES

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Prepared by:

WSP USA and Poznecki-Camarillo, Inc, 2022.



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7 ENVIRONMENTAL OVERVIEW AND SUSTAINABILITY INITIATIVES

7.1 ENVIRONMENTAL OVERVIEW

This Environmental Overview provides a preliminary review of resources listed in the Federal Aviation Administration's (FAA's) *Environmental Desk Reference for Airport Actions*, to identify potential environmental impacts associated with the development projects proposed as part of the Strategic Development Plan (SDP). All projects proposed in the SDP will require some level of environmental review under the National Environmental Protection Act (NEPA), such as a Categorical Exclusion (CatEx) or Environmental Assessment (EA). This overview serves to flag potential impacts to inform future NEPA documentation.

This Environmental Overview draws from the *Environmental Inventory Technical Report*, prepared in July 2018 as part of the SDP, which includes an inventory of sensitive environmental resources within the SAT area of potential disturbance, in view of federal regulations and coordination requirements regarding potential impacts to these resources.

7.1.1 PROPOSED PROJECTS AND AREA OF POTENTIAL DISTURBANCE

Figure 7.1-1 depicts the area of potential disturbance, which includes areas on- and off-airport that may be affected by projects proposed in the SDP. In addition, some resources in adjacent areas, such as historic resources, environmental justice communities and Section 4(f) resources may be affected by proposed projects and these areas are referred to as the study area. Areas that may be impacted by future changes in noise exposure contours are not included in the area of potential disturbance or this Environmental Overview.

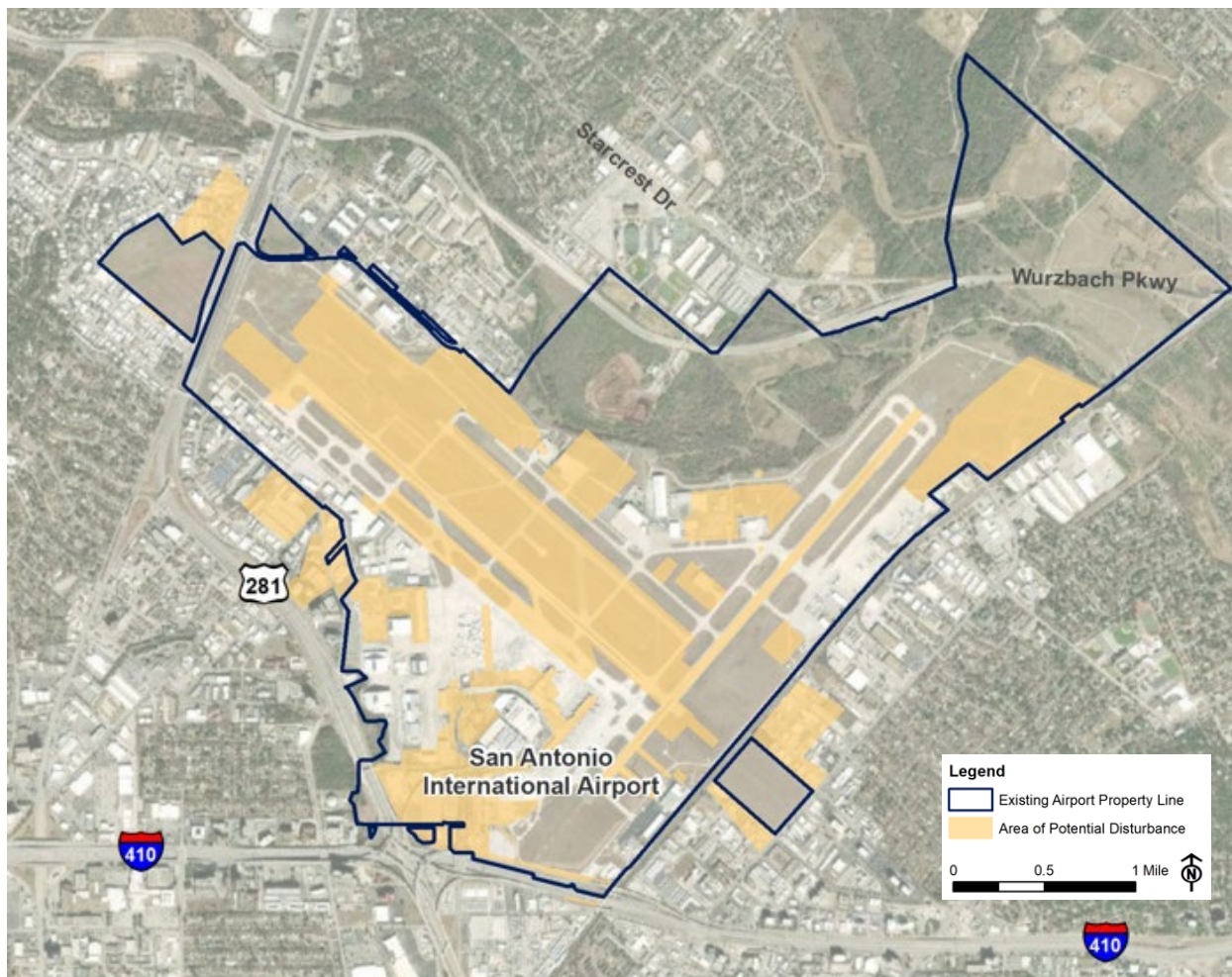
A brief description of the projects recommended as part of the SDP and discussed in this Environmental Overview is provided below. Detailed descriptions of the projects can be found in the *SAT SDP Alternatives Development and Evaluation* chapter.

AIRSIDE PROJECTS

- Runway 13R High-Speed Exit: Build high-speed exit taxiway for Runway 13R arrivals, and close existing runway exits L and D.
- Runway 13R/Taxiway G Extension: Extend Runway 13R by approximately 1,250' to accommodate farther reaching flights to and from the Airport.
- Runway 31L Decouple: Decouple Runway 13R-31L from Runway 4-22 for increased safety on the airfield.
- Taxiway A Closure and Compass Rose Relocation: Close remaining portion of Taxiway A and relocate compass rose west of upgraded ground runup enclosure (GRE).

- No-Taxi Island Installation and Excess Pavement Removal: Enhance airfield safety and clarity by installing a no-taxi island and removing excess pavement.
- Taxiway A Partial Closure: Remove pavement from Runway 13R-31L to compass rose. Leave pavement connecting Runway 13L-31R to allow access to compass rose until relocation.
- Taxiways M and P Closure: Close taxiways as they no longer meet industry standards and are seldom used.
- Shift Taxiway E: Reconstruct to industry standards and shift Taxiway E for better airfield flow.

Figure 7.1-1: Area of Potential Disturbance



Sources: ESRI, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, January 2021 (aerial); San Antonio International Airport, DRAFT Airport Layout Plan, December 2021 (existing airport property line); WSP USA, January 2022 (area of potential disturbance).

LANDSIDE PROJECTS

- Employee Parking Relocation: Relocate employee parking as an enabling project to construction of Terminal C.
- Parking Garage Construction - Phase 1: Build a six-level parking garage and ground transportation center in existing green space west of the existing Consolidated Rent-a-Car (CONRAC)/parking garage and Quick-Turn-Around facility.
- Parking Garage Construction - Phase 2: Construct second phase of parking garage.
- Terminal Loop Road Realignment: Realign Terminal Boulevard and increase its turn radius, as well as incorporate exits to Terminal Loop Road (S. Terminal Drive) and Dee Howard Way.
- Terminal Access Roadways Construction: Improve access roadways to and from the Airport for more efficient traffic movements and improved driver experience and safety.
- Waste Disposal Facilities Construction: Construct an additional waste disposal facility to support Terminal C.

TERMINAL PROJECTS

- Terminal C Construction: Build a new passenger terminal (Terminal C) with up to 17 gates, west of existing Terminal B; in place of existing employee parking. The new Terminal C gates will be equipped with hydrant fueling.
- Central Processor and Concourse A Reconstruction: Demolish existing Terminal B and build the central processor and gates in its place, upgrade Terminal A and rebuild Concourse A. These gates will also be equipped with hydrant fueling.
- Centralized Receiving & Distribution Facility Construction: Construct a central processing facility to improve security and more efficiently screen and move supplies to concessionaires in the current and future passenger terminals.

OTHER PROJECTS

- Fuel Farm Expansion: Build additional fuel storage to accommodate anticipated 2040 growth.
- Remain-Over-Night (RON) Hardstand Parking: Additional aircraft parking to accommodate 2030 demand.
- Air Traffic Control Tower and TRACON Relocation: Relocate ATCT/TRACON to allow room for Phase 2 parking garage.
- Ground Support Equipment/Line Maintenance and Belly Cargo Relocation: Relocate facilities to better utilize existing space on-airport.
- Fixed-Base Operator (FBO)/Corporate General Aviation (GA) Expansion: Build additional facilities to accommodate growth.
- VT San Antonio Aerospace (VTSAA) Maintenance, Repair, and Overhaul (MRO) Expansion: Build additional facilities to accommodate tenant growth.
- East Cargo North Expansion: Expand cargo area to the north to accommodate tenant growth.
- North MRO Expansion: Build additional facilities to accommodate tenant growth.



- East Cargo North Expansion: Expand cargo site identified as strategic development.
 - Aircraft Rescue and Fire Fighting Station Relocation: Build new station to replace aging station.
 - GRE Expansion: Expand existing GRE to allow for additional equipment to support larger aircraft.
-

7.1.2 RESOURCES NOT EXPECTED TO BE AFFECTED

The *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions* (Order 5050.4B) includes significance thresholds for environmental resources to be considered in NEPA.

The following resources, listed in the *FAA Desk Reference*, are not considered further in this analysis, as explained:

- **Coastal barriers, coastal zone:** not present in the study area
 - **Farmlands:** not present in the study area
 - **Wild and scenic rivers:** not present in the study area.
 - **Natural Resources and Energy Supply:** it is expected that consumable natural resources for construction and energy supply are sufficiently available so that the proposed projects will not affect their availability in the region.
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7.1.3 RESOURCES POTENTIALLY AFFECTED

This preliminary review identifies potential environmental impacts resulting from the implementation of the proposed SDP projects.

BIOLOGICAL RESOURCES

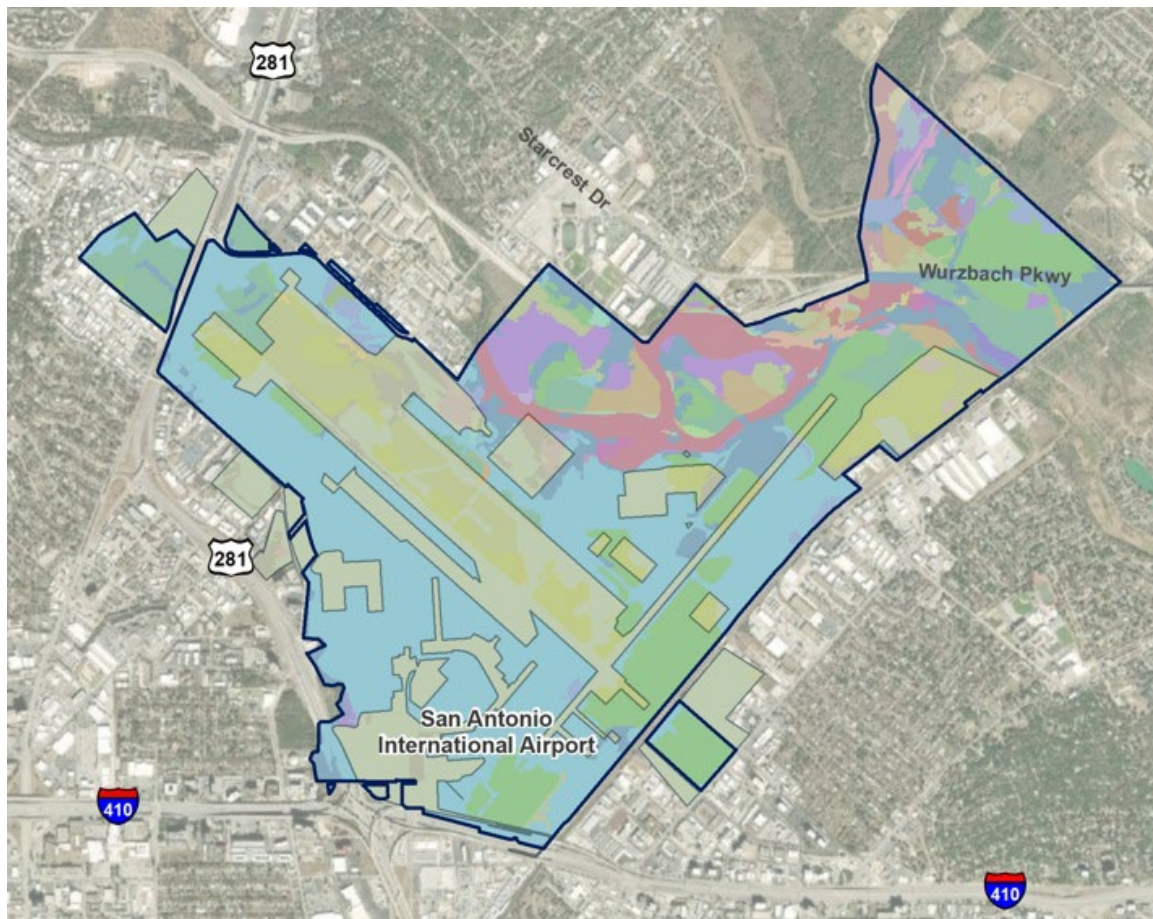
Biological resources include fish, wildlife, and plants. Potential impacts to biological resources include destruction or alteration of habitat and disturbance or elimination of biotic communities as a result of proposed projects implementation. A biotic community is an assemblage of living things residing together, including both plants and animals. *The Endangered Species Act of 1973 (ESA)*,¹ as amended, provides for the protection of certain plants and animals, as well as the habitats in which they are found. In compliance with the ESA, agencies overseeing federally funded projects are required to obtain from the U.S. Fish and Wildlife Service (USFWS) information concerning any species listed, or proposed to be listed, which may be present in the area of the proposed projects. A significant impact to federally-listed threatened and endangered species would occur when the USFWS determines that the proposed action would be likely to jeopardize the continued existence of the species of concern, or would result in the destruction or adverse modification of federally-designated critical habitat in the affected area.

¹ United States Code, *Title 16 Chapter 35: Endangered Species*, §1531 et seq., 1973.

Existing Conditions

Much of the study area has been developed or consists of urban vegetation on the southern portion and a riparian area along Salado Creek. The area of potential disturbance consists primarily of previously disturbed areas, urban vegetation and grassland. **Figure 7.4-1** depicts the vegetation of the Airport and Area of Potential Disturbance.

Figure 7.4-1: Vegetation in Airport and Area of Potential Disturbance



Legend

Existing Airport Property	Central Texas: Riparian Deciduous	Edwards Plateau: Savanna Grassland
Area of Potential Disturbance	Central Texas: Riparian Hardwood Forest	Marsh
Barren	Edwards Plateau: Ashe Juniper-Live Oak	Native Invasive: Deciduous Woodland
Blackland Prairie: Disturbance or Tame	Edwards Plateau: Deciduous Oak - Evergreen Motte and Woodland	Native Invasive: Juniper Shrubland
Central Texas: Floodplain Deciduous	Edwards Plateau: Floodplain Hardwood - Ashe Juniper Forest	Native Invasive: Mesquite Shrubland
Central Texas: Floodplain Evergreen	Edwards Plateau: Floodplain Hardwood Forest	Post Oak Savanna: Live Oak Motte and Woodland
Central Texas: Floodplain Hardwood - Evergreen Forest	Edwards Plateau: Live Oak Motte and Woodland	Row Crops
Central Texas: Floodplain Hardwood Forest	Edwards Plateau: Oak - Hardwood Motte and Woodland	South Texas: Shallow Shrubland
Central Texas: Floodplain Herbaceous	Edwards Plateau: Post Oak Motte and Woodland	Urban High Intensity
Central Texas: Floodplain Live Oak Forest	Edwards Plateau: Riparian Hardwood Forest	Urban Low Intensity

0 0.5 1 Mile

Sources: ESRI, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, January 2021 (aerial); San Antonio International Airport, DRAFT Airport Layout Plan, December 2021 (existing airport property line); Texas Parks and Wildlife Department, Ecological Mapping Systems of Texas: Texas Blackland Prairies EMST, September 2016 (vegetation); WSP USA, January 2022 (area of potential disturbance).

Due to the largely urbanized area in and around the Airport, most observed wildlife are habitat generalists that are tolerant of high-intensity human developments. These species include the raccoon, opossum, mourning dove, blue jay, white-tailed deer, and a variety of insects and invertebrates. Additionally, there are two migratory bird species, Harris's Sparrow and Lesser Yellowlegs, that have the potential to occur in the study area according to the U.S. Fish and Wildlife Service's (USFWS) *Trust Resource Report* for the study area. Harris's Sparrow has the potential to occur seasonally in the winter.

The preferred wintering habitat of the Harris's Sparrow has the potential to be in the study area, as the sparrow prefers hedgerows, agricultural fields, shrubby pastures, backyards and shrubby areas near streams.² Based on this description and the vegetation present in the study area, it is possible that the Harris's Sparrow has wintering habitat in the study area. Lesser Yellowlegs's preferred habitat are coastal estuaries, salt and fesh marshes, edges of lakes and ponds and typically more common in freshwater habitats.¹ Based on this description and the vegetation present in the study area, it is unlikely that Lesser Yellowlegs has migration habitat in the study area.

The USFWS identifies nine federally-endangered karst species within Bexar County: Bracken Bat Cave meshweaver, Cokendolpher Cave harvestman, Government Canyon bat cave meshweaver, Government Canyon bat cave spider, Madla's Cave meshweaver, Robber Baron Cave meshweaver, Ground Beetle, Ground Beetle, Helotes mold beetle.¹ However, the study area is located within Karst Zone 3, which is defined as areas (both cavernous and non-cavernous) that probably do not contain endangered cave fauna.³ Since the study area resides in a Karst Zone 3, it is unlikely threatened or endangered species reside in the study area and would be impacted by the proposed projects. **Figure 7.4-2** displays the karst zones in relation to the study area and the surrounding area. The amount of impervious surfaces already present in the area lessens the likelihood of potential for impact to these endangered species. No known endangered species of fish are known to inhabit the waters present in the study area. Suitable habitat for the federal candidate monarch butterfly occurs in the study area and the status of the monarch should be monitored prior to any development.

Recommendation

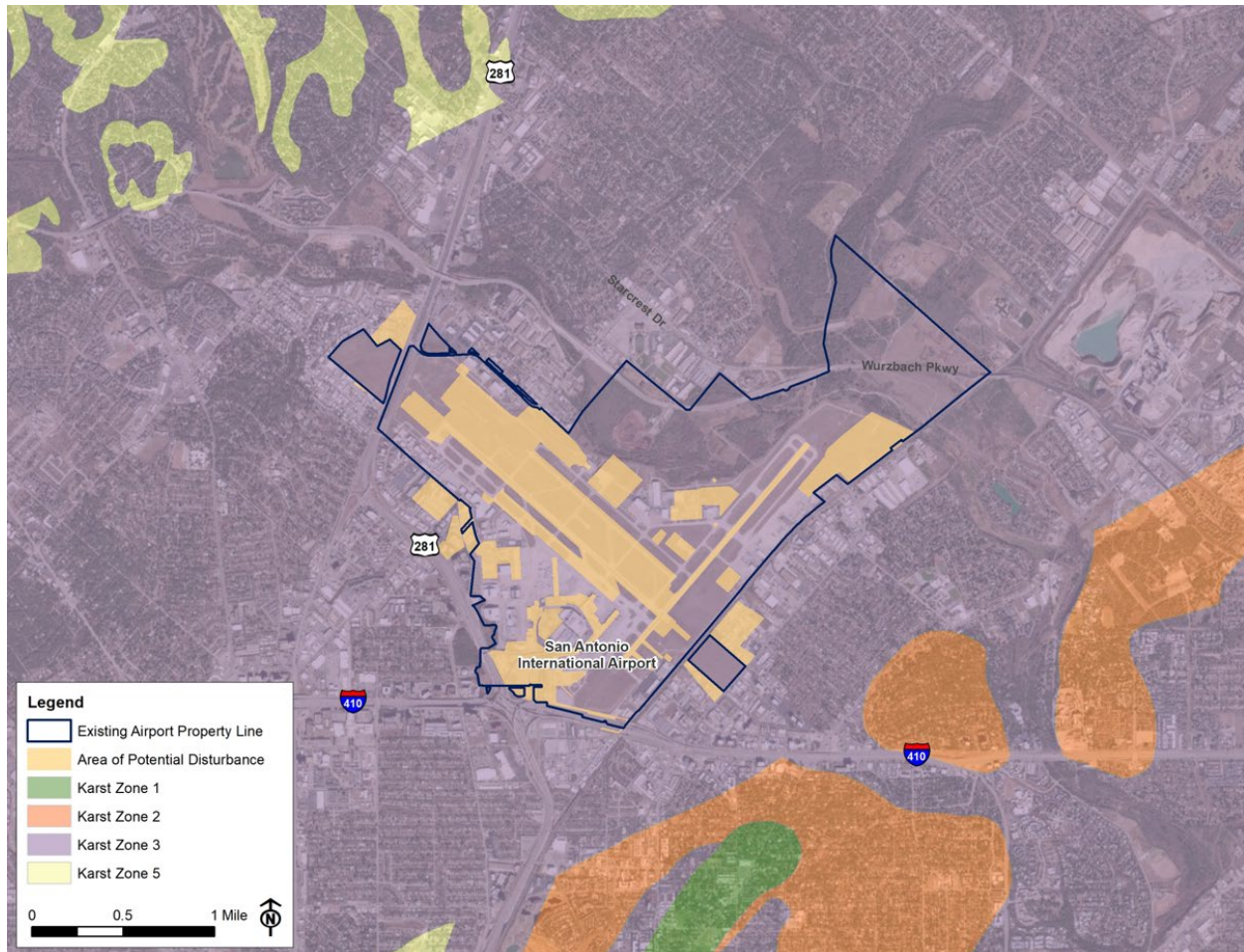
- Concurrent with the NEPA process, coordination will be required with the USFWS to assess the potential for impacts from the proposed project to endangered and candidate species and to migratory birds.

² U.S. Fish and Wildlife Service, *FWS Critical Habitat for Threatened and Endangered Species Dataset*, July 11, 2018.

² Texas Parks and Wildlife Department, *Annotated County Lists of Rare Species – Bexar County*, Last Revision: October 1, 2021.

³ U.S. Fish and Wildlife Service. *Bexar County Karst Invertebrates Recovery Plan*, August 2011.

Figure 7.4-2: Karst Zones within and adjacent to Study Area.



Sources: ESRI, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, January 2021 (aerial); San Antonio International Airport, DRAFT Airport Layout Plan, December 2021 (existing airport property line); U.S. Fish and Wildlife Service, Ecological Services Southwest Region Maps and Data: Karst Zones, December 2006 (karst zones); WSP USA, January 2022 (area of potential disturbance).

HAZARDOUS MATERIALS/SOLID WASTE

The potential impacts resulting from hazardous materials, solid waste collection, control, and disposal due to airport projects must be assessed. The following four primary laws govern the handling and disposal of hazardous materials, chemicals, substances, and wastes:

- Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), (as amended by the Superfund Amendments and Reauthorization Act of 1986 and the community Environmental Response Facilitation Act of 1992)
- Pollution Prevention Act of 1990
- Toxic Substances Control Act of 1976(TSCA), as amended
- Resource Conservation and Recovery Act of 1976 (RCRA), (as amended by the Superfund Amendments and Reauthorization Act of 1986 and the Community Environmental Response Facilitation Act of 1992)

The two statutes of most importance to the FAA for actions to construct and operate airport facilities and navigational aids are RCRA and CERCLA. RCRA governs the generation, treatment, storage, and disposal of hazardous wastes. CERCLA provides for consultation with natural resources' trustees and cleanup of any release of a hazardous substance (excluding petroleum) into the environment.

Existing Conditions

Due to the history of jet fuel/diesel spills and cases of leaking petroleum storage tanks at SAT, it is possible that there is contamination within the study area. While these cases have been closed, it does not mean the contamination has been completely remediated, nor that the contamination is no longer present. Furthermore, illicit discharges from the Green Light Company, dating back to 1981, resulted in contamination of groundwater and soil in the area of potential disturbance. Subsurface flow of groundwater may have caused contamination to migrate further into the study area. Additional analysis and research for the proposed development areas, such as environmental due diligence audits or environmental site assessments, will need to be performed to determine the potential to disturb contaminated soil or water from past uses. Construction of the proposed projects has the potential to expose hazardous materials through demolition of existing airport-owned buildings and excavation of past ground contamination.

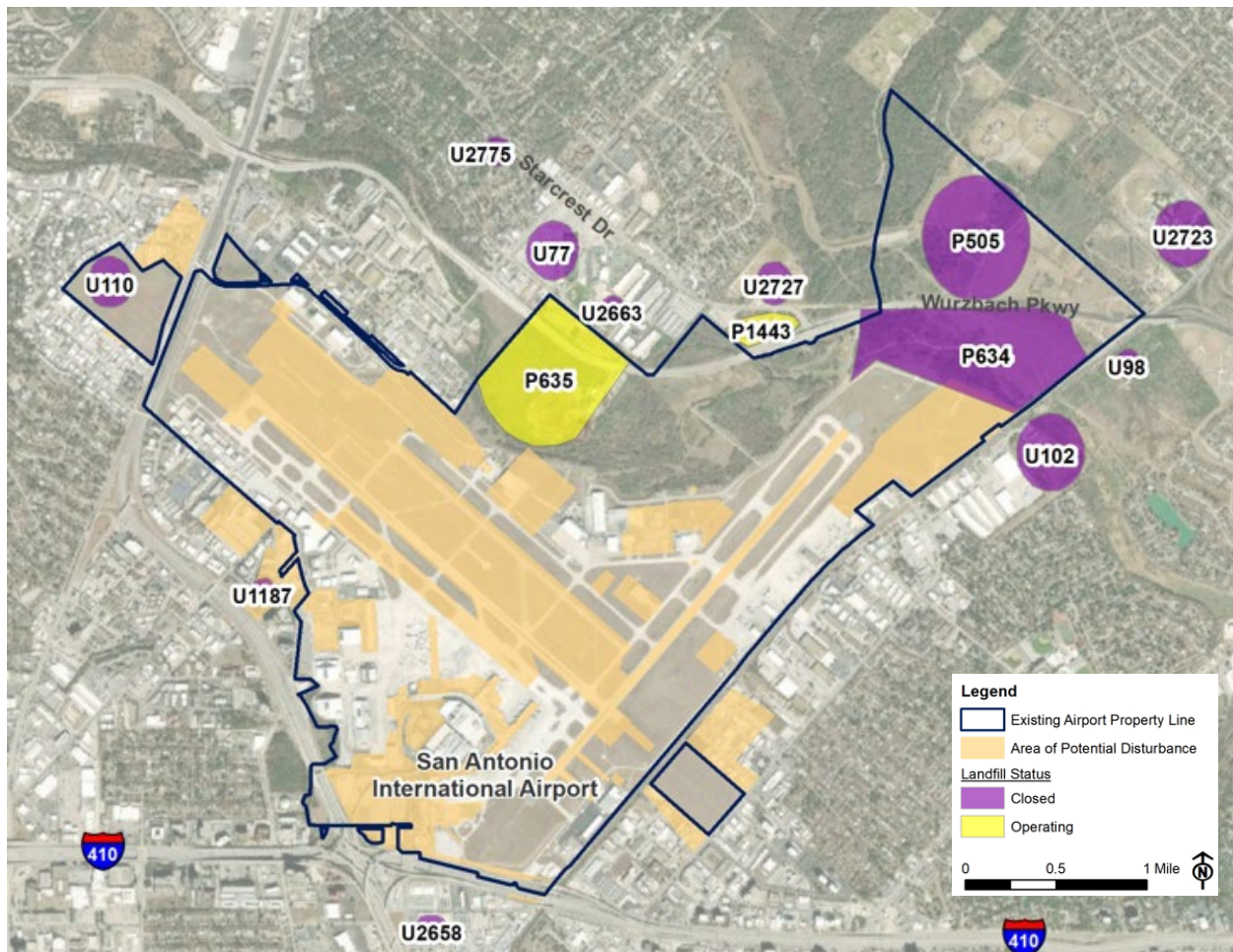
Within the Airport boundary, there are three closed and one operating landfill. There has been some evidence during prior construction projects that there may be other Municipal Solid Waste (MSW) areas on the airport. There are also several landfills (operating and closed) in the area immediately surrounding the Airport. In addition to posing the potential for contaminated soil and water, landfills are wildlife (bird) hazard attractants. The area of potential disturbance intersects with or completely contains two closed landfills, one on-airport and one off-airport in land planned for acquisition (U1187). **Figure 7.4-3** depicts all landfills that occur within and immediately surrounding the Airport. The landfills that occur within the area of potential disturbance are the Wetmore Road Landfill (P634) and Union Square Landfill (U1187). Landfill U1187 is completely contained within the area of potential disturbance, while landfill P634 intersects with the area of potential disturbance. Both landfills are closed. The Union Square Landfill is a closed, unpermitted landfill with unknown dates of operation, waste types, and sizes (unknown sizes estimated at 5 acres by Alamo Area Council of Governments). However, this property has been redeveloped and is currently used for office buildings, and therefore, appears to have a low potential for impacts. The Wetmore Road Landfill had a standard Municipal Solid Waste landfill permit and according to available reports, this landfill is unlined, allowing the potential for leaching contaminants out of the landfill area (Booz, Allen, Hamilton 2007). Altering or moving waste from this facility would require special permitting procedures. A municipal solid waste landfill, as defined by the US EPA, receives household waste and may also include commercial solid waste, nonhazardous waste or sludge, industrial nonhazardous waste, and conditionally exempt small quantity generator waste. A former unknown landfill (Union Square U1187) exists within the area of potential disturbance.

Demolition required as part of the proposed projects is not anticipated to exceed available landfill Municipal Solid Waste Landfill (MSWLF) or incineration capacities in the region, or require extraordinary effort to meet applicable solid waste permit conditions or regulations. Sufficient solid waste disposal landfill capacity exists in the region to accommodate the demolition and other solid waste materials associated with construction of the proposed projects. Waste Management Plans for projects involving contaminated material should incorporate Texas Commission on Environmental Quality (TCEQ) and the appropriate disposal landfill input to meet applicable regulations on a project-by-project basis.

Recommendation

- Conduct Environmental Due Diligence Audits prior to acquiring property to identify the potential for presence of hazardous materials on the property.
- Evaluate potential impacts from hazardous materials as part of the NEPA process for each of the proposed projects.
- Coordinate with the Texas Waste Enforcement Branch prior to disturbance of potential hazardous waste sites or demolition activities to ensure proper assessments are conducted and abatement practices are followed, if necessary.

Figure 7.4-3: Landfills Within and Surrounding the Study Area.



Sources: ESRI, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, January 2021 (aerial); San Antonio International Airport, DRAFT Airport Layout Plan, December 2021 (existing airport property line); Alamo Area Council of Governments (AACOG), Bexar County Inventory of Closed or Abandoned Landfills, 2018; TCEQ MSW Facilities, 2018; Banks Regulatory Database Report – 17029-WSP28445A, July 9, 2018 (landfills); WSP USA, January 2022 (area of potential disturbance).

CULTURAL RESOURCES

Section 106 of the National Historic Preservation Act (54 U.S.C. § 300101) (NHPA) and its implementing regulations at 36 C.F.R. Part 800 require federal agencies to consider the effects of their undertakings on

historic properties, which are defined as above and below ground prehistoric and historic districts, sites, buildings, structures, and objects included in, or eligible for inclusion in, the National Register of Historic Places (NRHP), including artifacts, records, and material remains relating to the district, site, building, structure, or object.

To be eligible or listed in the NRHP, properties must meet certain criteria for historic or cultural significance and be at least 50 years old. Under 36 C.F.R. § 800.3, Section 106 requires the lead federal agency (in this case, FAA), in consultation with the State Historic Preservation Officer (SHPO, in this case the Texas Historical Commission), to develop the Area of Potential Effects (APE), identify historic properties (i.e., NRHP-listed and NRHP-eligible) in the APE, and make determinations of the proposed project's effect on historic properties in the APE. Section 106 regulations require that the lead federal agency consult with the SHPO and identified parties with an interest in historic resources during planning and development of the proposed project. Adverse effects are resolved by seeking ways to avoid or minimize them, or entering into a project-specific Memorandum of Agreement or Programmatic Agreement, as applicable, to mitigate the adverse effect. Projects that have no effect on historic properties are determined to have a finding of "No Historic Properties Affected," and projects that effect a historic property but do not alter a characteristic that qualifies it for inclusion in the NRHP are determined to have a finding of "No Adverse Effect."

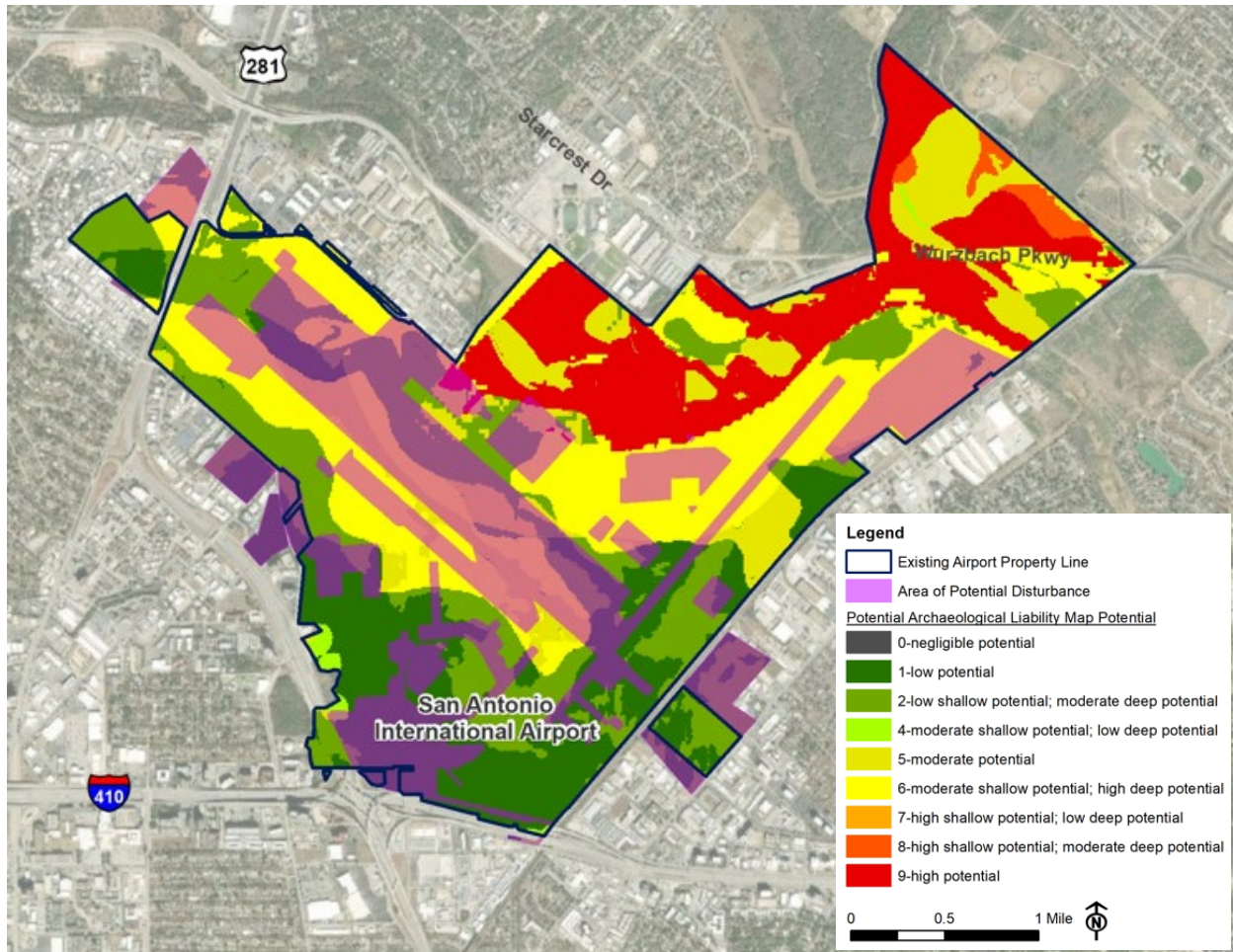
Existing Conditions

Because the SDP anticipates projects occurring by 2030 (mid-term) and 2040 (long-term), building, sites, structures, objects, and potential districts in and near the Airport that were constructed in 1980 or earlier (thereby meeting the 50-year-old threshold by 2030) should be identified and evaluated for NRHP eligibility. San Antonio International Airport was developed in the 1940s, and grew following World War II, once the military relinquished control of the Airport to the City of San Antonio. Over time, the Airport expanded through construction of new runways, hangars, terminals, and other support facilities; many were altered or are no longer extant.

Project activities proposed for 2030 directly impact properties constructed in 1980 or earlier. While not all of these facilities would likely constitute historic properties under Section 106, application of the NRHP Criteria for Evaluation is necessary to identify historic properties within a project's potential APE and provide an opportunity to avoid or minimize any future adverse effects. Proposed project activities for 2030 and 2040 are extensive and include demolition of buildings constructed more than 50 years ago that have not been previously evaluated. These include, for example, the Bagging Office (Building 1322) and Hangar 4 (Building 1318), which were constructed prior to 1970 and are proposed to be razed during implementation of the 2030 Projects. Additionally, the famous Dee Howard Aero company was active on the Airport for decades in the area west of the terminal. If determined eligible for listing in the NRHP, this action would likely result in a finding of Adverse Effect.

Potential adverse effects are not limited to above-ground, built resources. The potential archaeology liability map for the study area includes areas of low, moderate, and high archaeological potential. Thus, ground-disturbing activities could adversely affect prehistoric or historic archaeological sites, if present. See **Figure 7.4-4** for the potential archaeology liability map within the study area.

Figure 7.4-4: Potential Archaeology Liability Map within Study Area.



Sources: ESRI, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, January 2021 (aerial); San Antonio International Airport, DRAFT Airport Layout Plan, December 2021 (existing airport property line); Texas Department of Transportation, Potential Archaeology Liability Maps City of San Antonio, December 2016 (potential archaeological liability map potential) ; WSP USA, January 2022 (area of potential disturbance).

Recommendation

- Conduct a comprehensive cultural resources survey of the study area to identify and evaluate properties constructed in 1980 or earlier, at minimum, with consideration to include identification of properties constructed in 1990 or earlier that may be affected through implementation of 2040 Projects to determine if they are eligible for listing on the NRHP.
- Conduct archeological surveys in areas where ground disturbance is proposed to identify and evaluate properties that are potentially eligible for listing on the NRHP.
- Initiate the Section 106 process early in the implementation planning process in order to identify NRHP listed and eligible properties.

SECTION 4(F) OF THE U.S. DEPARTMENT OF TRANSPORTATION ACT

Under Section 4(f), publicly-owned parks, recreation areas, wildlife and waterfowl refuges and certain historic sites are protected. Before approving a project that uses Section 4(f) property, federal transportation



agencies, including the FAA, must either (1) determine that the impacts are *de minimis* (will not adversely affect the activities, features, or attributes of the property), or (2) undertake a Section 4(f) Evaluation. If the Section 4(f) Evaluation identifies a feasible and prudent alternative that completely avoids Section 4(f) properties, it must be selected. If there is no feasible and prudent alternative that avoids all Section 4(f) properties, FAA has some discretion in selecting the alternative that causes the least overall harm. FAA must also find that all possible planning to minimize harm to the Section 4(f) property has occurred.⁴

Existing Conditions

Within the Airport property, there are two park/recreation areas: McAllister Park and Salado Creek Greenway North, although neither intersects with the area of potential disturbance. **Figure 7.4-5** shows public parks and recreation areas within and surrounding the Airport. There are no Texas Parks and Wildlife Department (TPWD) Wildlife Management Areas (WMAs) or USFWS wildlife refuges within the study area that would be subject to Section 4(f).

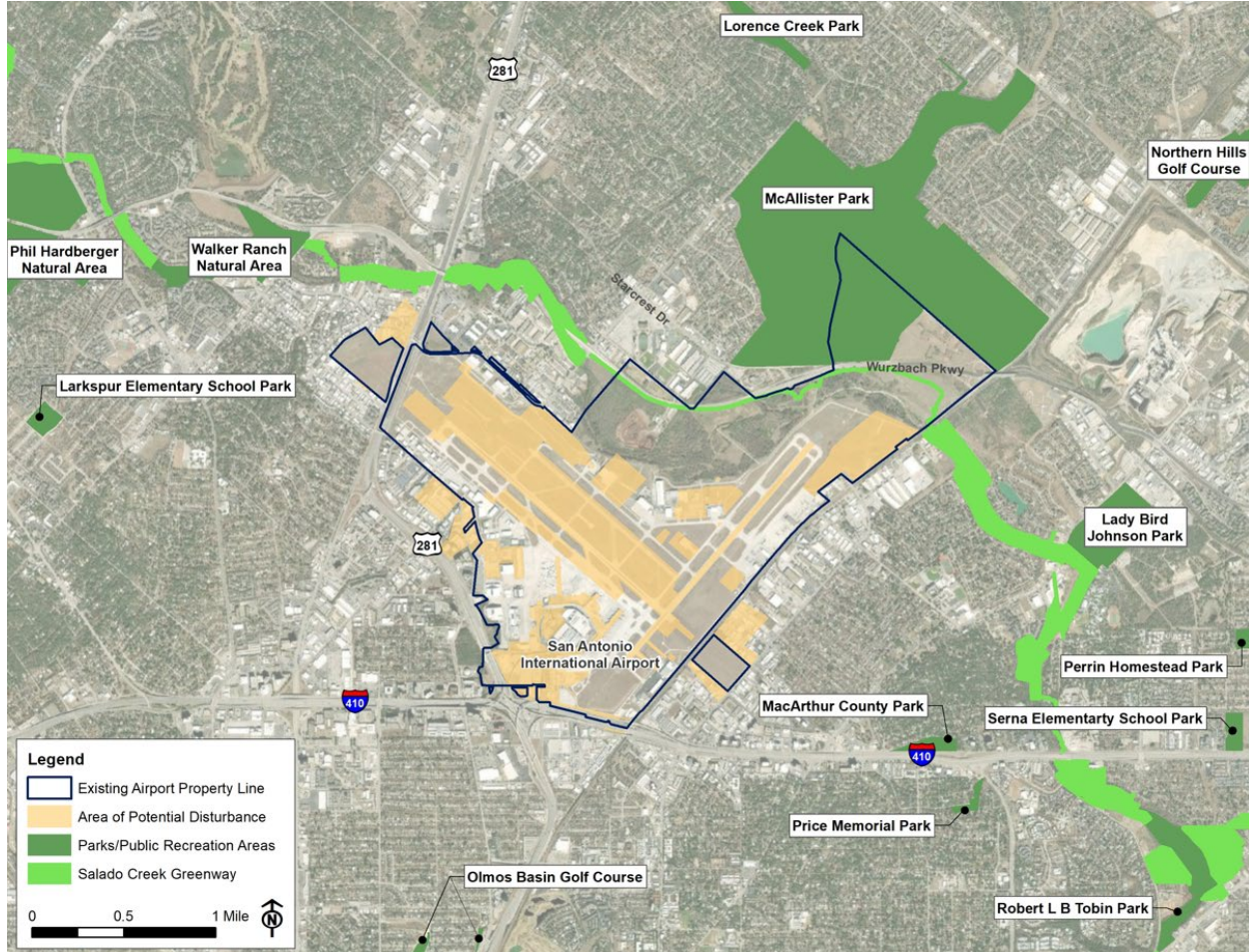
Under Section 4(f), historic sites are those properties listed in or eligible for listing in the NRHP. These properties are identified through the Section 106 process described in Section 0 and through consultation with the official with jurisdiction, which is the SHPO. It is recommended that the Section 106 process is initiated early in the implementation planning process in order to identify Section 4(f) historic sites and develop avoidance alternatives, if needed.

In order to make a *de minimis* Section 4(f) impact determination, a finding of No Historic Properties Affected or No Adverse Effect under Section 106 is required. For archaeological sites, no Section 4(f) use exists, unless it is determined that the archaeological site is NRHP-listed or eligible and warrants preservation in place.

Recommendation

- As noted above in Section 0, conduct a survey of the project study area to identify and evaluate properties constructed in 1980 or earlier for NRHP eligibility, such as Hangar 4 or the Badging Office, and initiate Section 106 process early in the implementation planning process, to identify Section 106/Section 4(f) historic sites and develop avoidance alternatives, if needed.

⁴ U.S. Department of Transportation Federal Highway Administration. *Section 4(f) Policy Paper*. July 20, 2012.

Figure 7.4-5: Public Parks/Recreation Areas within and adjacent to Study Area.


Sources: ESRI, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, January 2021 (aerial); San Antonio International Airport, DRAFT Airport Layout Plan, December 2021 (existing airport property line); San Antonio Parks and Recreation Department, GIS Open Data Hub (parks); WSP USA, January 2022 (area of potential disturbance).

SOCIOECONOMIC IMPACTS, ENVIRONMENTAL JUSTICE, CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS

Socioeconomic and environmental justice impacts, and children's environmental health and safety risks occur from:

- Extensive relocation of residents is required, where sufficient replacement housing is unavailable.
- Extensive relocation of community businesses would create severe economic hardship for the affected communities.
- Disruptions of local traffic patterns that substantially reduce the levels of service of the roads.
- A substantial loss in community tax base.
- Disproportionate impacts to environmental justice populations.
- Disproportionate health and safety risks to children.

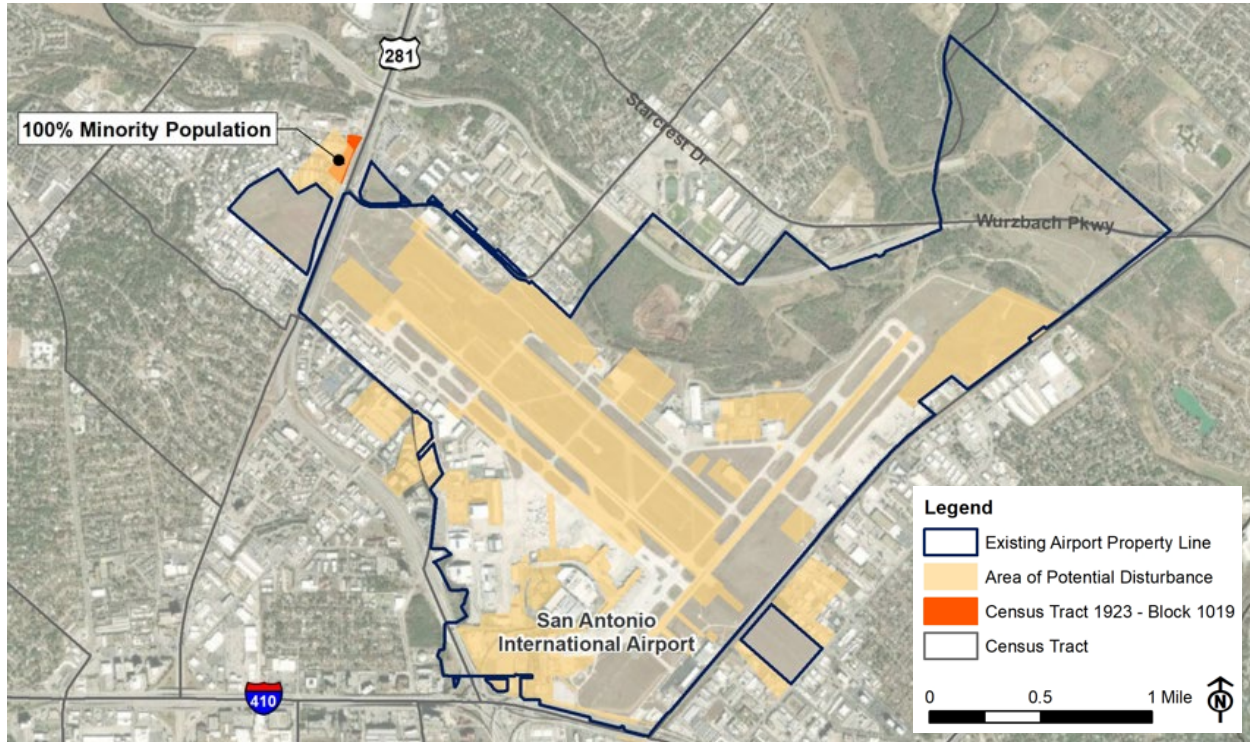
Existing Conditions

Socioeconomic impacts are those factors that affect surrounding communities, such as shifts in patterns of population movement and growth, public service demands, and changes in business and economic activity to the extent influenced by the Airport development. At a county level, the region has experienced population growth and is expected to continue at a rate of approximately 1 percent per year until 2040. The Airport has been, and continues to be, a major factor in attracting businesses and/or industrial development. New development is likely to produce positive socioeconomic benefits associated with new jobs and increased tax revenues.

Limited acquisitions of commercial land are required to achieve the proposed projects. Properties would be purchased when they are for sale; no eminent domain process would be used; therefore there would be no relocations of residents or businesses. There are proposed changes to roads on-airport: E Terminal Boulevard, S Terminal Boulevard, N Terminal Boulevard, Northern Boulevard, northbound U.S. 281 direct connector, Dee Howard Way, and Loop 410. These may impact traffic patterns on-airport during construction, but is not anticipated to negatively impact traffic patterns post-construction. The total of approximately 101 acres of acquisitions make up less than 0.01% of the City's 323,200 acres, and therefore would constitute an insignificant effect to the City's tax base.

Environmental justice populations include those that are predominantly minority and/or have low income. According to the U.S. Census Bureau, minorities include persons classified by the U.S. Census Bureau as Black/African American, Hispanic or Latino, Asian or Pacific Islander, American Indian, Eskimo or Aleut, or other non-white persons. Minority populations are defined as areas that contain 50 percent or more in minority persons. The population for the area surrounding the Airport was 1,750 persons in the 2010 U.S. Census and as a whole, has a majority white population (52.9 percent). Within the area of potential disturbance there is one census block with more than 50% of minority persons and therefore, is an environmental justice population.. Block 1019 intersects with an area planned for acquisition' it has a total population of 9 persons and a 100% minority population. **Figure 7.4-6** shows Block 1019. Since it is SAAS's policy to not use eminent domain, properties would be purchased when they are for sale, therefore no displacements are expected in this area.

Low-income populations are an additional consideration when accounting for environmental justice in federal actions. Household income is used to identify the presence of low-income populations. Based on the 2012-2016 American Community Survey (ACS) data, the average household size is approximately three persons within the Airport area. The U.S. Department of Health and Human Services (HHS) 2021 poverty guidelines states that a three-person household is considered low-income if they earn less than \$21,960 per year. Using U.S. Census Bureau census tract data, it was determined that there are a total of 14,480 households within the area immediately surrounding the Airport. The median household income for these households is approximately \$67,506, which is well above the HHS 2021 poverty guideline for a family of three. There are no census tracts in the area immediately surrounding the Airport that have a median household income below the HHS 2021 poverty guideline. According to the U.S. Census Bureau, the median age of the City of San Antonio is 33 years, with approximately 368,963 children under the age of 18 in households. Within the area of potential disturbance there are 3 households with children under the age of 18.

Figure 7.4-6: Minority Populations in Area of Potential Disturbance.

Sources: ESRI, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, January 2021 (aerial); San Antonio International Airport, DRAFT Airport Layout Plan, December 2021 (existing airport property line); U.S. Census Bureau, TIGER/Line Shapefile, 2011 (census tract, block); WSP USA, January 2022 (area of potential disturbance).

Recommendation

When other impacts are evaluated, particularly local air quality impacts and noise impacts, the impact areas will have to be evaluated for the presence of environmental justice populations, and the impacts will have to be evaluated to determine if they would disproportionately fall on the environmental justice populations.

When other impacts are evaluated, particularly local air quality impacts and noise impacts, the impact areas will have to be evaluated for the presence of children, and the impacts will have to be evaluated to determine if they would affect children's health and safety.

WATER RESOURCES

Water resources are surface waters and groundwater that are important in providing drinking water and in supporting recreation, transportation and commerce, industry, agriculture, and aquatic ecosystems. Surface water, groundwater, floodplains, and wetlands function as a single integrated natural system.

The Airport lies partially within the transition zone of the Edwards Aquifer, an Environmental Protection Agency (EPA)-designated sole source aquifer. Additionally, the Airport lies within the headwaters of Salado Creek, which drains into the San Antonio River south of Loop 410. Salado Creek and two of its tributaries, Mud Creek and Lorence Creek, as well as a tributary to Olmos Creek, lie within the Airport property. The base floodplain of Salado Creek resides partially within the Airport property, including one National Wetlands Inventory (NWI)-identified wetland.

FLOODPLAINS

Executive Order 11988, *Floodplain Management*, requires federal agencies to avoid adverse impacts on floodplains and their natural and beneficial values (CFR 1977). USDOT Order 5650.2, *Floodplain Management and Protection*, outlines USDOT's policies and procedures for implementing Executive Order 11988. Order 5650.2 is intended to ensure that "proper consideration is given to the avoidance and mitigation of adverse floodplain impacts in agency actions, planning programs, and budget requests."⁵ Any act that may affect a floodplain (at a minimum, the 100-year floodplain) must be reviewed for compliance with Executive Order 11988. The 100-year floodplain refers to an area, often low land adjoining a river, stream, or water body, which is covered by water during the flood event that has a one percent chance of being equaled or exceeded in magnitude in any given year. This area, which is also called the base floodplain, also contains the floodway. Any action that is within the limits of the base floodplain is an encroachment as defined in FAA 1050.1F, *Desk Reference*, Chapter 14-Water Resources. If encroachment occurs due to a proposed action, it must be determined whether it is a significant encroachment under USDOT Order 5650.2. "Significant encroachment" is defined as encroachment that results in one or more of the following:

- A considerable probability of loss of human life
- Likely future damage associated with the encroachment that could be substantial in cost or extent, including interruption of service on or loss of a vital transportation facility
- A notable adverse impact on "natural and beneficial floodplain values"

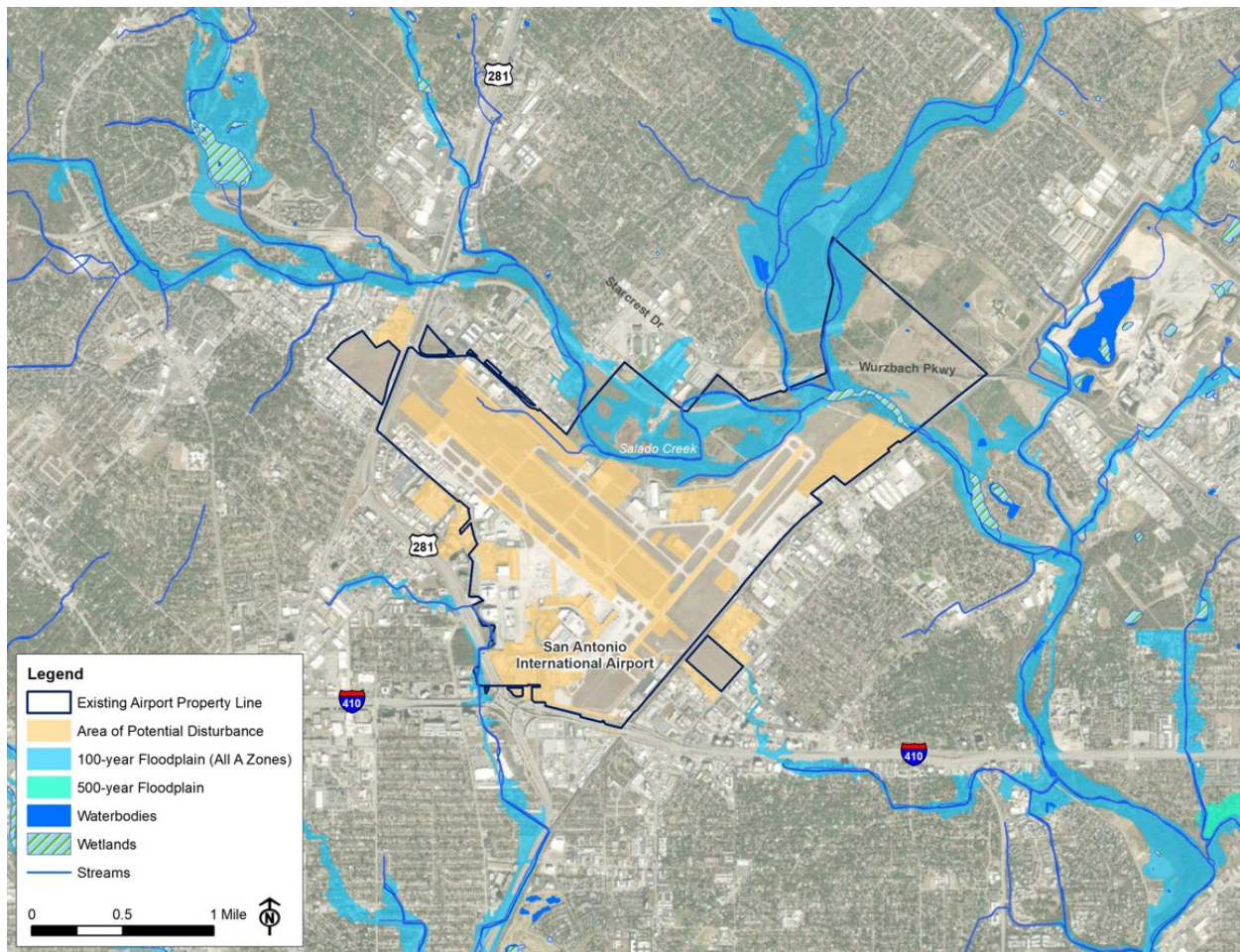
Existing Conditions

Current 100-year floodplain information for the area surrounding the Airport is depicted on **Figure 7.4-7**. It was compiled from the Federal Emergency Management Agency's (FEMA) National Flood Hazard Layer viewer, as FEMA maps are the primary reference for determining the extent of floodplains. As shown in Figure 7.4-7, areas of the 100-year floodplain occur on and adjacent to the Airport property, including along Salado Creek in the northern portion of the property. Two project areas occur inside the 100-year floodplain of Salado Creek. Project areas include the East Cargo North expansion and North MRO expansion. Total area of the floodplain intersections is approximately 10,415 square feet. Though neither project is likely to result in a significant encroachment, the impact to floodplains needs to be considered for future development and construction. If a significant encroachment is required or found, Executive Order 11988 requires that the FAA must issue a written finding that the design is the only "practicable alternative" and follow all state and local floodplain regulations.

Bexar County requires a Flood Development Permit for any construction activity in proximity to the 100-year floodplain. A Professional Engineer must conduct a flood study to determine the base flood elevation or to alter the floodplain limits because of the construction activity.

⁵ U.S. Department of Transportation, *Order 5650.2 Floodplain Management and Protection*, April 23, 1979.

Figure 7.4-7: Potential Impacts to Floodplains



Sources: ESRI, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, January 2021 (aerial); Federal Emergency Management Agency (FEMA), National Flood Hazard Layer Viewer, FIRM Panels: 48029C0265H, 48029C0263H, 48029C0245G, 48029C0235G, 48029C0255G, 48029C0260G, and 48029C0270G, June 2020 (floodplains); U.S. Fish and Wildlife Service, National Wetlands Inventory, August 2019 (wetlands); U.S. Geological Survey, The National Map, National Hydrography Dataset, December 2021 (waterbodies, streams); San Antonio International Airport, DRAFT Airport Layout Plan, December 2021 (existing airport property line); WSP USA, January 2022 (area of potential disturbance).

Recommendation

Future NEPA documentation should include an assessment of floodplain impacts and any practicable alternatives in accordance with the requirements of Executive Order 11988.

WETLANDS AND SURFACE WATERS

The US Army Corps of Engineers (USACE) and the US Environmental Protection Agency (USEPA) define wetlands as: "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar

areas.”⁶ Executive Order 11990, Order DOT 5660.1A, *The Rivers and Harbors Act of 1899*, and the Section 404 of the Clean Water Act address activities in wetlands. Order 11990 requires Federal agencies to ensure their actions minimize the destruction, loss, or degradation of wetlands. It also assures the protection, preservation, and enhancement of the nation’s wetlands to the fullest extent practicable during the planning, construction, funding, and operation of transportation facilities and projects.

Surface waters include streams, rivers, lakes, ponds, estuaries, and oceans. Actions by federal agencies are to avoid “exceed[ing] water quality standards established by federal, state, local and tribal regulatory agencies; or contaminate public drinking water supply, such that public health may be adversely affected.”⁷ Considerations include if the action would have the potential to:

- Adversely affect natural and beneficial water resource values to a degree that substantially diminishes or destroys such values,
- Adversely affect surface water such that the beneficial uses and values of such waters are appreciably diminished or can no longer be maintained and such impairment cannot be avoided or satisfactorily mitigated, or;
- Present difficulties based on water quality impacts when obtaining a permit or authorization.

Indirect and direct impacts need to be considered when evaluating impacts to surface waters and resulting water quality.

Existing Conditions

As depicted on **Figure 7.4-8**, there is one area of potential jurisdictional wetlands and streams on or adjacent to Airport property. Wetlands and streams are shown to their full extent to demonstrate continuity between resources. The wetland, however, remains free of intersection with any proposed project area.

The Airport currently has a storm drainage connection to Salado Creek on the north side of the property near the denoted stream crossing into the area of potential disturbance. Based on this information, it is likely that the stream crossing into the area of potential disturbance is an additional stormwater runoff route. The aforementioned stream is highlighted in Figure 7.4-8.

Salado Creek and two of its tributaries are located within the study area. The area drains into Salado Creek which is a tributary of the Upper San Antonio River. A drainage study was completed in 2018 by Maestas & Associates, LLC, on behalf of the San Antonio Airport System; findings were presented in the *San Antonio International Airport Master Plan, Inventory of Existing Conditions chapter*.⁸ The study noted there was limited information regarding the Airport’s underground drainage system, and portions of the information could be unreliable. According to the study, Salado Creek generates a large amount of flow due to the large corresponding drainage area, approximately 126 square miles of contributing area. The creek’s stormwater

⁶ U.S. Army Corps of Engineers, *Wetlands Delineation Manual*, January 1987.

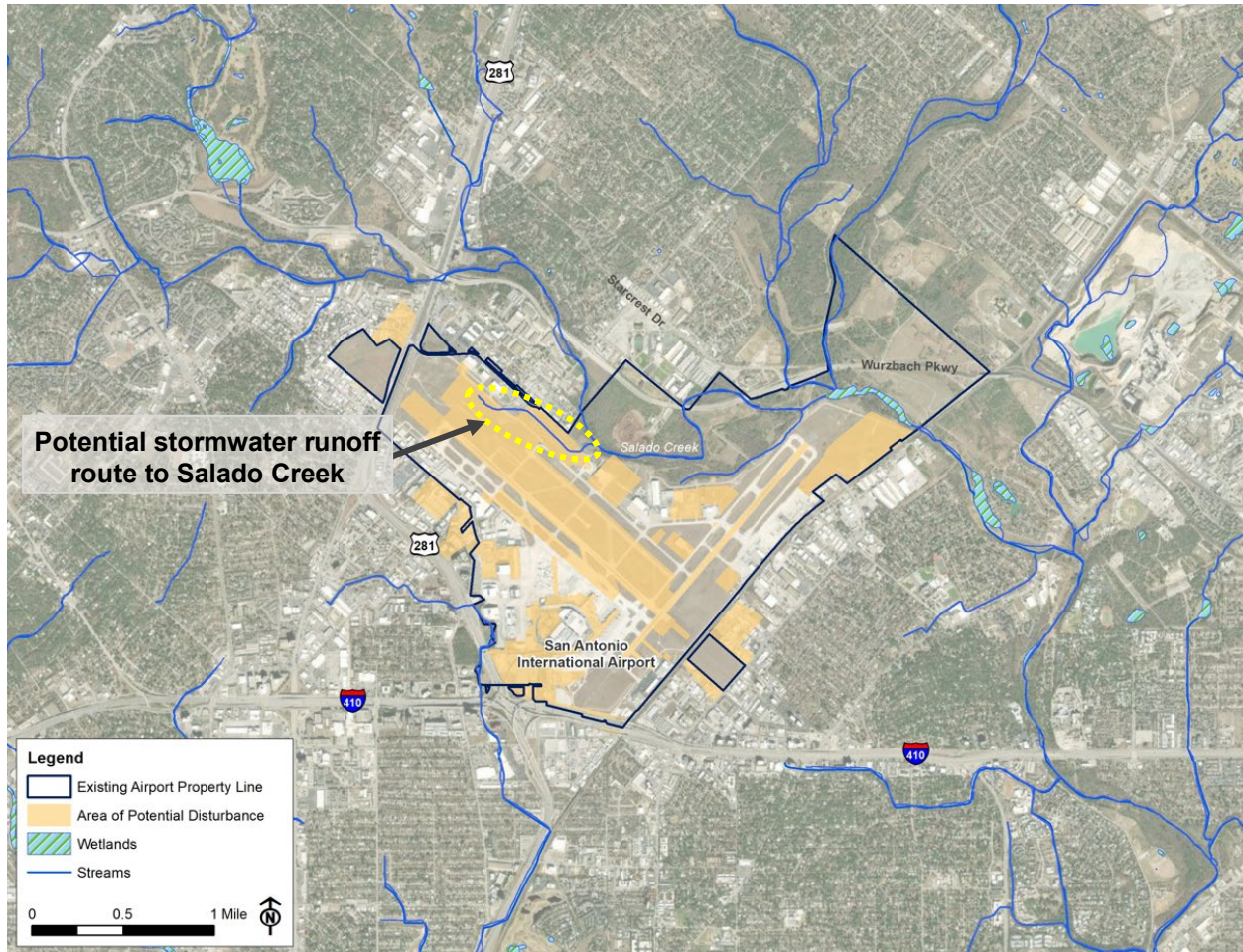
⁷ Federal Aviation Administration, *1050.1F Desk Reference*, February 2020.

⁸ WSP USA, *San Antonio International Airport Master Plan, Inventory of Existing Conditions – DRAFT*, 2019.

flow was documented during a significant rainfall event in July 2018. It is noted that most of the Airport drains to Salado Creek through multiple outfalls, which can generate significant runoff in rain events lower than the statistical one-year frequency storm.

Based on the information presented above, there is potential for increased stormwater runoff with the addition of impervious surfaces from the proposed projects. Due to the large amount of runoff that enters the creek from the Airport, the proposed actions may negatively impact the surrounding surface waters.

Figure 7.4-8: Potential Impacts to Wetlands and Surface Waters



Sources: ESRI, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, January 2021 (aerial); U.S. Fish and Wildlife Service, National Wetlands Inventory, August 2019 (wetlands); U.S. Geological Survey, The National Map, National Hydrography Dataset, December 2021 (streams); San Antonio International Airport, DRAFT Airport Layout Plan, December 2021 (existing airport property line); WSP USA, January 2022 (area of potential disturbance).

Recommendation

In future NEPA actions, formal USACE delineations should be conducted to determine jurisdictional status of the wetland. Field reconnaissance may identify additional wetlands that could warrant protection.

GROUNDWATER

Existing Conditions

The Airport is within the boundary of the Edwards Aquifer, an EPA-designated sole source aquifer. The Airport partially resides within the Edwards Aquifer Transition Zone. While most of the Airport resides outside of any aquifer zone, a section in the northwestern portion of the Airport resides in the transition zone. **Figure 7.4-9** depicts the transition zone in relation to the Airport and area of potential disturbance. Two rules apply when working within the boundary of the Edwards Aquifer:

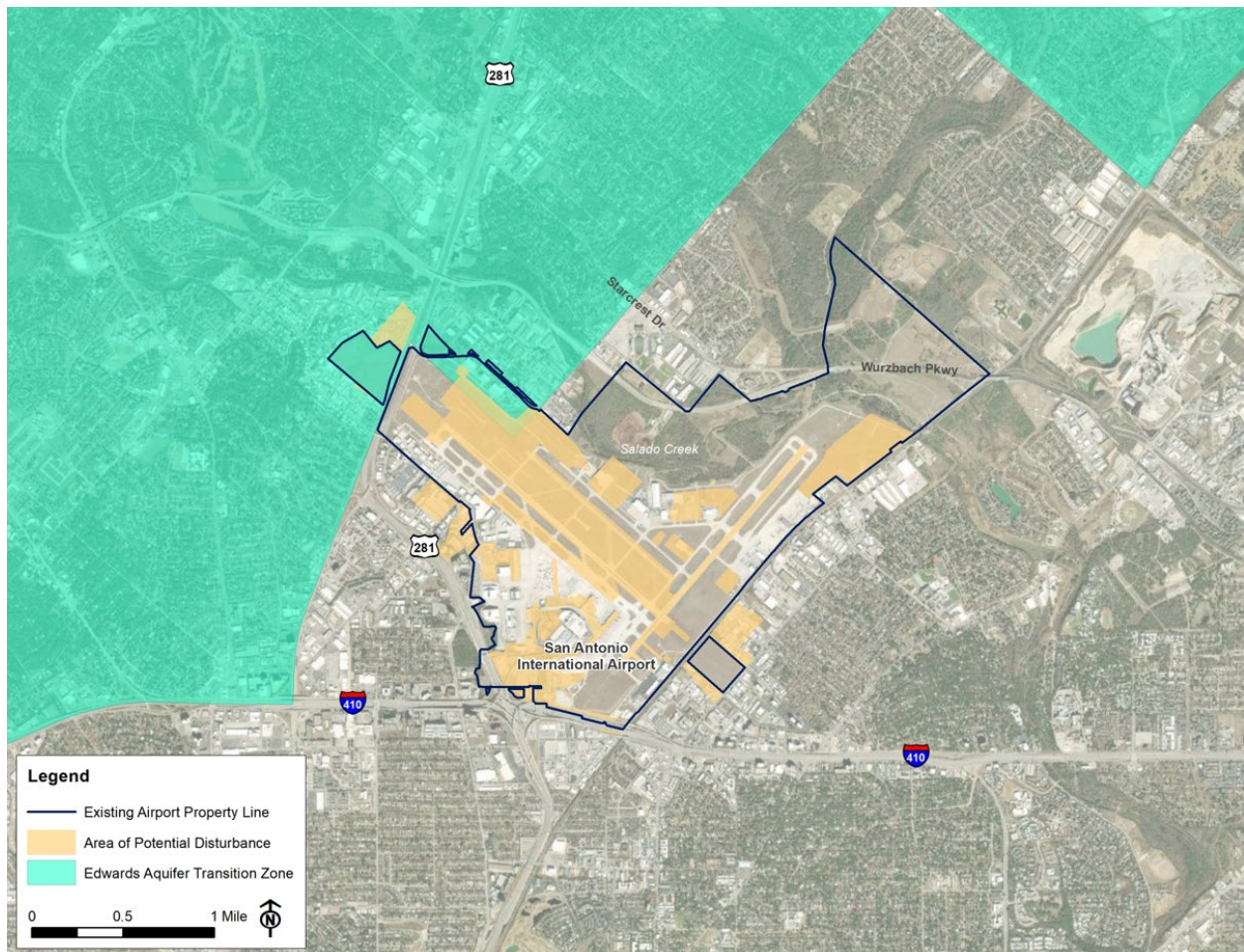
- The Edwards Aquifer Rules: apply to projects that are located within the Edwards Aquifer Contributing Zone (EACZ), Edward Aquifer Recharge Zone (EARZ), or Edwards Aquifer Transition Zone (EATZ). As stated by the Texas Commission of Environmental Quality, those who are affected by the Edwards Aquifer Rules are those who (1) are carrying out construction-related or post-construction activity on the recharge or transition zones and (2) activity has a potential for polluting the aquifer and surface streams that recharge it.⁹
- The Safe Drinking Water Act: prohibits any federal agency from funding actions that would contaminate an EPA-designated sole source aquifer or its recharge area. As previously mentioned, the Edwards Aquifer is an EPA-designated sole source aquifer. However, neither the Airport nor the proposed projects reside in a recharge area.

As mentioned in the Surface Waters section, the proposed projects could result in increased runoff due to the increased area of impervious surfaces.

Recommendation

Future NEPA needs to consider the effects on stormwater runoff.

⁹ Texas Commission on Environmental Quality Field Operations Support Division, *Rules Protecting the Edwards Aquifer Recharge, Contributing, and Transition Zones*, April 2008.

Figure 7.4-9: Edwards Aquifer Transition Zone

Sources: ESRI, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, January 2021 (aerial); San Antonio International Airport, DRAFT Airport Layout Plan, December 2021 (existing airport property line); Texas Commission on Environmental Quality, GIS Data Hub, October 2021 (transition zone); WSP USA, January 2022 (area of potential disturbance).

RESOURCES NOT DISCUSSED, BUT REQUIRING FURTHER EVALUATION

AIR QUALITY

Effective September 24, 2021, Bexar County has been designated as a marginal non-attainment area for ozone. Therefore, General Conformity Rule under the federal Clean Air Act is applicable and both construction and operational impacts to air quality will need to be evaluated and reported concurrent with the NEPA analysis.

CLIMATE

It is expected that the construction and operation of most alternatives would require energy, and thus produce greenhouse gas (GHG) emissions. Individual alternatives should be evaluated further.

LIGHT EMISSIONS AND VISUAL EFFECTS

The proposed airfield layout will change (runway extensions, runway upgrade, runway closure), resulting in changes to lighting in and around the Airport. Light emissions and visual impacts will need to be evaluated in further analysis.

NOISE AND COMPATIBLE LAND USE

The runway extensions, would result in changes to flight patterns and associated aircraft noise. Changes in aircraft noise impacts would need to be evaluated as part of the NEPA analysis.

In addition to the impacts of noise on land use compatibility, actions may also affect land use (e.g., disruption of communities, relocation, induced socioeconomic impacts, land uses protected under Section 4(f) of the U.S. Department of Transportation Act).

TRIBAL CONSULTATION

There are seven federally-recognized Native American tribes that have an interest in projects located in Bexar County, including:

- Alabama-Coushatta Tribe of Texas
- Apache Tribe of Oklahoma
- Comanche Nation, Oklahoma
- Coushatta Tribe of Louisiana
- Mescalero Apache Tribe of the Mescalero Reservation, New Mexico
- Tonkawa Tribe of Indians of Oklahoma
- Wichita and Affiliated Tribes (Wichita, Keechi, Waco, and Tawakonie), Oklahoma

FAA should consult with tribal representatives as part of the NEPA and Section 106 processes..

7.2 SUSTAINABILITY INITIATIVES

In 2011, the San Antonio Airport System (SAAS) developed and implemented a Sustainability Plan¹⁰ for SAT, whose objective is to demonstrate how an entity may make measurable progress toward more efficient use of energy, water and materials, while reducing negative environmental and social impacts. The *2011/2012 Aviation Sustainability Plan* complements the City of San Antonio (CoSA)'s effort to provide sustainability leadership in the community.

The Airport's sustainability vision and how sustainability was considered in the SAT SDP are discussed in this section.

¹⁰ San Antonio Airport System, *Aviation Sustainability Plan*, 2011.

7.2.1 DEFINITION OF SUSTAINABILITY

The term *sustainability* has been typically assumed to only encompass environmental friendliness. However, the initial intent of sustainability extends beyond environmental friendliness. The National Environmental Policy Act (NEPA) of 1969 committed the United States to sustainability, declaring it a national policy, “to create and maintain conditions under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic, and other requirements of present and future generations.”

Since the enactment of NEPA in 1969, the Federal Aviation Administration has refined the definition of sustainable actions as actions that reduce environmental impacts, maintain high, stable levels of economic growth, and achieve social progress – a broad set of actions that ensure organizational goals are achieved in a way that’s consistent with the needs and values of the local community.

7.2.2 SUSTAINABILITY VISION STATEMENT

SAT is committed to ensuring environmental sustainability and regulatory compliance through planning, outreach, and oversight.

7.2.3 SUSTAINABILITY CONSIDERATIONS IN THE STRATEGIC DEVELOPMENT PLAN

Sustainability considerations were taken into account early in the planning process. For the purposes of this document, all sustainability considerations are in reference to the planning process and are kept to a high level. Sustainability initiatives like recycling, sustainable aviation fuels (SAFs), renewable energy, or building design are not considered in this document, as they do not relate to the planning process for the proposed action. It is also important to note that the CoSA and SAT have sustainability initiatives outside of this planning document. One example of the SDP’s sustainability considerations is a recycling technical memo that outlines current actions and future recommendations for continued efforts at the Airport.

Generally, sustainability considerations revolved around maximizing efficiency in and around the Airport. Maximizing efficiency results in reductions in aircraft taxi/idle times, airport access road congestion, passenger vehicle idling emissions and improvement of accessibility to the Airport. Additionally, increased efficiency sets up the Airport as a regional transportation hub. Reductions in aircraft taxi/idle times and roadway congestion reduce the carbon footprint at the Airport caused by vehicle emissions. Additionally, efforts were made to use existing infrastructure in the proposed alternatives whenever possible, to avoid unnecessary construction and limit the impacts of construction and demolition to an as-needed basis. Finally, the Airport maintained a priority to involve the community by diversifying the outreach mediums to reach a broad audience and ensure the feedback received reflected the views of the surrounding community groups.

AIRFIELD

The preferred airfield alternative is multifaceted in its sustainability approach, incorporating community input and mitigating unnecessary environmental harm. The preferred airfield alternative encompasses a runway extension to reach further destinations, addition of a high-speed exit for Runway 13R arrivals to reduce runway occupancy time, and improved taxiway geometry to improve safety. A significant effort was made throughout the planning process to limit the amount of construction projects, while still meeting the forecast demand for the 20-year planning horizon. There are no “build it and they will come” projects.

RUNWAY 13R-31L

To limit the potential environmental consequences of the runway extension, the total length of the runway would be limited to approximately 10,000 feet versus a justifiable length of 10,700 feet; both runway ends would be extended, but these extensions would remain on existing airport property. Incorporating these criteria into the runway extension keeps the runway on airport, avoiding any additional environmental and community impacts, and cost of depressing U.S. 281 and constructing a bridge over the newly depressed highway.

To maximize the efficiency and capacity of Runway 13R-31L, a high-speed exit is proposed for Runway 13R arrivals. The high-speed exit taxiway allows aircraft to exit the runway at higher speeds, thus reducing the time aircraft spend on the runway, in turn reducing taxi times, and thus reducing aircraft emissions on the airfield. Additionally, the addition of a high-speed exit on Runway 13R increases runway capacity, allowing the full potential of the runway to be realized, and delaying the need for a parallel commercial service runway (which is not projected to be required within the 2040 planning horizon).

TAXIWAY GEOMETRY

Likewise, taxiway geometry will be improved to meet current design standards, allowing for increased airfield safety. At their most basic level, sustainability and safety are about the same thing: conserving resources. In the case of sustainability, those resources are typically thought of as environmental. In the case of safety, the resources are human. Therefore, any improvement in safety is a sustainable initiative.

TERMINAL

The existing passenger terminal does not meet the needs of the Airport, and much of Terminal A's infrastructure needs significant repairs or replacement, as much of the building systems are past or at the end of their useful lives. Due to Terminal A's functional deficiency and Terminal B's overloaded electrical infrastructure, a replacement of the Terminal complex – built in place – is proposed as the preferred alternative. Other sites for a new terminal complex were considered but dismissed. Building the replacement Terminal in place of the existing reduces the impact of the construction project, on both the community and environment. The community avoids impacts as operations at the Airport can be sustained during construction, and additional land resources will not need to be annexed from the community. Likewise, environmental impact is reduced by incorporating existing functional facilities (i.e. curb space) and avoiding land use conversion.

The preferred terminal alternative consists of three concourses and a central processor. Terminal C, located west of Terminal B, would be built first to provide sufficient gate capacity while reconstructing Concourse A and refurbishing Terminal A, then constructing the central processor and Concourse B. Upon completion of the terminal projects, gate capacity would meet demand projected for 2040.

The passenger processing portion of existing Terminal A would be refurbished, while the concourse portion would be rebuilt to meet concourse width and functional layout standards. Terminal B would be replaced with a new central processor and concourse to accommodate ticketing, Security screening checkpoint (SSCP) and baggage screening functions, as well as 8 gates along the north face of the building.

The preferred alternative is planned to accommodate demand projected for the next 20 years, with flexibility to adjust to actual aviation demand built into the design and phasing of the project. The project aims to limit emissions, waste, and use of natural resources by limiting the amount of construction and demolition at the Airport. In alignment with that narrative, the new terminal facilities would have the potential for eGSE outfitting to accommodate the future of electric vehicles and the change in GSE fleet from gas to electric power. Including infrastructure support for electric vehicles would allow operations to switch from gas-powered to electric-powered ground service vehicles, therefore significantly reducing or eliminating emissions due to GSE operations. Further expansion or additional terminal construction would happen on an as-needed basis, and is planned for in the preservation of on-airport space, thus canceling the need to convert land to future terminal facilities. In addition to the terminal facilities highlighted above, a hydrant fueling system is proposed under the terminal apron. A hydrant fueling system would replace the current method of aircraft fueling by fuel delivery trucks, thus eliminating vehicular emissions during fuel delivery.

LANDSIDE

The current alignment and signalization of the airport access roads is inefficient, resulting in delayed driver decisions and unnecessary weaving, exacerbating existing congestion and idle times for passenger vehicles. Additionally, multi-modal airport access needs improvement overall in order to accommodate passengers with varying situations and needs. Improving access includes incorporating transit options to connect the Airport with downtown San Antonio, as well as plan for driverless vehicles and technological advances anticipated in the future. Improving multi-modal access to the Airport would provide accommodation to passengers that do not drive, low-income transportation options, and mitigate road traffic congestion by providing passengers an alternative to driving.

VIA Metropolitan Transit (VIA) has identified corridors that will serve future rapid transit (Advanced Rapid Transit) connecting a north-south corridor, including downtown and the Airport. Likewise, *ConnectSA*, a nonprofit created by Mayor Ron Nirenberg, supports the future development of a multi-modal transportation network that will improve connectivity. To accommodate these transit options within the 2040 planning horizon, the Airport will need a transit hub to provide passengers easy access between the Airport and the ground transportation options available to them. The SDP therefore incorporates a Ground Transportation Center (GTC) to be built as part of the parking garage for the new Terminal C. Transit integration improves accessibility by providing low-cost transportation options to the local community (i.e. low-income, non-drivers, etc.) and improves business connections, as tourists are able to integrate with the local economy without the need for a passenger vehicle. Providing passengers an alternative to driving can reduce emissions and fuel consumption from low-density transportation methods (i.e. passenger vehicles) by transporting a higher density of passengers per trip. Incorporating transit in the future of SAT appeals to the three pillars of sustainable development – environmental, social, economical – and adheres to the mission set forth by the Airport to be a regional transportation hub, while being mindful of the Airport's impact on the community and environment. Additionally, the proposed GTC will accommodate transit and commercial vehicles, such as taxis, TNCs, hotel and parking shuttles, and buses that currently pick up at the busy terminal curb. Curb congestion will therefore be reduced, likely producing an air emissions (and safety) benefit.

While transit integration has the potential to mitigate some passenger trips by car, it will not alleviate all future traffic, nor will it curtail problems currently being experienced at the Airport. The preferred roadway alternative includes a roundabout on Dee Howard Way, a circulatory route to the south that ties into Airport Boulevard, lowering of the northbound U.S. 281 direct connector as it approaches Airport Boulevard, and a newly constructed U-turn ramp under I-410 to bypass the traffic signals on Airport Boulevard. These additions and renovations to the airport access roads aim to improve the driver experience and reduce vehicle emissions at the Airport. Improving driver decision-making distance through lowering the U.S. 281 connector reduces congestion related to short driver decision-making distance. Increasing driver decision-making distance allows more time for drivers to make the necessary traffic decisions without slowing down the flow of airport traffic, thereby improving congestion and decreasing idle times. Similarly, a roundabout at Dee Howard Way and the I-410 bypass allow for continuous movement through the area, which reduces congestion and idle times on airport property, and subsequently reduces the emissions that result from those activities.

To further mitigate congestion and idling experienced at the Airport, realignment of the terminal access road is proposed. Currently, the road is not getting full utilization of all four lanes, which results in congestion that can extend down the road and long idle/wait times at the Airport. The preferred option increases the efficiency of the existing 4-lane road and aims to prevent slowdowns when picking up passengers, by removing/relocating existing columns and shifting the road starting at East Terminal Dr., so drivers have additional decision-making distance when picking up passengers. To prevent unnecessary impacts, this option does not include the construction of additional lanes. The proposed improvements will mitigate the congestion and idle/wait times experienced, which will see a reduction in the carbon emissions from those activities.

The U.S. Department of Energy estimates that about 6 billion gallons of fuel are wasted annually by heavy-duty and light-duty vehicle idling, and researchers estimate that about half is attributable to idling of personal vehicles. Eliminating CO₂ emissions being generated by vehicle idling would be the equivalent of taking 5 million vehicles off the roads (U.S. Department of Energy, *Idling Reduction for Personal Vehicles*). The Airport can contribute to the reduction of carbon emissions due to passenger vehicle idling through the aforementioned proposed improvements. Using an average of 0.5 gallons of fuel per hour wasted by idling and the U.S. Environmental Protection Agency's accepted average carbon content of 8,887 grams CO₂/gallon of gasoline, it can be estimated that, on average, a passenger vehicle emits about 74.1 grams CO₂/minute of gas powered driving (SCDHEC, *Vehicle Idling Fact Sheet*; USEPA, *Greenhouse Gas Emissions from a Typical Passenger Vehicle*). Using the aforementioned average carbon emission rate to afternoon peak time delay data,¹¹ overall Airport and access road emissions can be estimated. Time delay data for afternoon peak was chosen due to the high volume of traffic in and around the Airport during those hours, providing a more significant depiction of the emissions generated at the Airport. For existing 2018 time delay data, average idling emissions overall at the Airport are 38.3 grams/vehicle. More specifically, airport access roads emissions on Dee Howard Way and Airport Boulevard equate to about 21.5 grams/vehicle and 55.1 grams/vehicle, respectively. If a no build scenario were pursued, average overall

¹¹ San Antonio International Airport, *Strategic Development Plan - Facility Requirements and Alternatives Development chapters*, WSP, October 2021 (DRAFT).

Airport emissions would increase to an average of 460.4 grams/vehicle, with specific access road emissions increasing to 471.5 grams/vehicle on Dee Howard Way and 449.3 grams/vehicle on Airport Boulevard. **Table 7.2-1** summarizes these findings.

Table 7.2-1: Estimated Overall Airport and Access Road Emissions for Afternoon Peak

ACCESS ROAD EMISSIONS	EXISTING – 2018 EMISSIONS (GRAMS CO ₂ /VEHICLE)	NO BUILD – 2040 EMISSIONS (GRAMS CO ₂ /VEHICLE)
Dee Howard Way Access Road	21.5	471.5
Airport Blvd Access Road	55.1	449.3
Average for Access Roads	38.3	460.4

Sources: South Carolina Department of Health and Environmental Control, Vehicle Idling Fact Sheet, November 2015; U.S. Environmental Protection Agency, *Greenhouse Gas Emissions from a Typical Passenger Vehicle*, March 2018; WSP USA, 2021.

The Airport's initiative to increase the efficiency of current airport access roads will mitigate the carbon emissions from passenger drop-off and pick-up. The current road network is inefficient, which can be seen through the time delay data and resulting emissions from idling. The proposed road improvements would most likely significantly reduce or eliminate any additional emissions from projected traffic increases. Additionally, the efficiencies of the proposed road improvements have the potential to decrease vehicle idling emissions below 2018 levels, by encouraging continued traffic flow through measures like increased driver decision-making time and streamlined entrance and exit routes to the Airport.

STAKEHOLDER ENGAGEMENT

Throughout the Strategic Development Plan, public engagement has been actively solicited. Methods for public engagement include informal pop-up meetings, coffee house information sessions, public open house meetings, participation in community meetings, social media, web page, newsletters, surveys, and three stakeholder committees (the technical advisory committee, stakeholder working group, and transportation and planning partners working group). Development alternatives were developed with stakeholder input from the technical advisory committee and San Antonio Airport Advisory Commission in two Sketch Planning Sessions, and were eventually chosen based on the Airport's long-term aviation needs and public feedback. The various methods to reach the public provided opportunity for city-wide representation (all 10 Districts) in the development of the plan, and ultimately, the preferred alternatives presented in this document. Refer to the Stakeholder Engagement information section for more information.

REGIONAL ECONOMY

Economic viability is an important pillar of sustainability. SAT is an economic generator in the the region by providing a world-class airport for travelers. As a world-class airport, SAT aims to support both business and tourism travelers, which will help grow local businesses and provide additional income for the community. An SDP *Economic Impact Study (Appendix 1C)* conducted in 2018 found that the SAAS generates an impact of approximately \$5.2B, most of which is attributable to SAT.

Developments and initiatives that include sustainability will help attain these aspirations. The proposed developments highlighted in this Strategic Development Plan not only improve efficiency and allow the Airport to meet the demand associated with being a regional economic generator, but also aim to limit the

negative consequences of the Airport's operations and development. The proposed developments provide an example of sustainability leadership and set a precedent of environmental and social awareness for other businesses in the regional economy.

7.3 AIRPORT RESILIENCY CONSIDERATIONS

The following are some general resiliency considerations for airports, from the *Airport Consultants Council* and *International Civil Aviation Organization*^{12|13}:

- Incorporate potential hazard evaluation, vulnerabilities of airport assets, and exposure to risk or danger into project scoping.
- Pursue non-aeronautical land use development to diversify revenue streams.
- Evaluate insurance options to assess parametric insurance options for future natural or man-made disasters:
 - Parametric insurance measures amount of payout based on triggering event. Example: payout for damage due to a windstorm could be related to wind speed at a certain location.
 - Has the potential to cover operational disturbances and offers flexibility to cover many different needs.
- Monetize risk when assessing the resiliency of a project (i.e. effects due to climate change, future pandemic, terrorism, evolving aviation business environment).
- Develop a climate adaptation plan to mitigate the expected effects on operations and infrastructure at the airport. Consider short- and long-term adaptation strategies.
- Measure and track actions as they are implemented in order to report their success or make adjustments as needed. Variable measurement styles may vary. Some may be easy to assess with metrics, others may be qualitative in nature.
- Combine mitigation with adaptation strategies when planning projects. For example, planning a solar farm both mitigates the amount of CO² being generated by the airport, while also planning for adaptation strategies to mitigate the effects of climate change.

¹² Airport Consultants Council, *Rethinking Airport Resiliency in the Aftermath of COVID-19*, https://acconline.org/wp-content/uploads/ACC_Resiliency-Guidance_FINAL.pdf, accessed February 8, 2022.

¹³ International Civil Aviation Organization, *Climate Resilient Airports*, <https://www.icao.int/environmental-protection/Documents/Climate%20resilient%20airports.pdf>, accessed February 8, 2022.

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