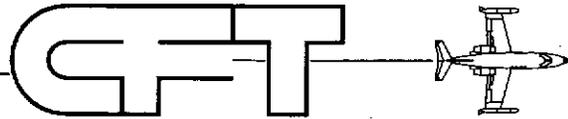


Greenlee County Airport Master Plan

(2000-2020)



Chapter 6 Environmental
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Stantec

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Introduction

The Environmental Overview Chapter provides a cursory review of existing environmental conditions at and around Greenlee County Airport. The Greenlee County Airport is located in southeastern Arizona in Township 5 South, Range 30 East. The airport is approximately 8½ miles southeast of the towns of Clifton and Morenci.

As presented in previous chapters, this Airport Master Plan proposes development to meet the future aviation demand at the airport over an estimated 20-year planning window. In addition, the Plan reflects other possible development referred to as "contingency development" which may be needed as the community continues its ongoing economic development efforts. Further, "contingency development" includes a scenario which consists of the possible development of a federal prison and its associated need for a lengthy runway for large aircraft operations.

The purpose of this environmental overview is to identify potential adverse environmental impacts, which may be related to the continued operation and maintenance of the Greenlee County Airport. All potential impacts are presented within twenty specific impact categories, ranging from noise to construction impacts. These categories are identified in FAA Order 5050.4A, the Airport Environmental Handbook (FAA, 1985). These subjects must be addressed in any project that involves any of the following:

- Airport location
- New runway
- Major runway extension
- Runway strengthening creating specific noise conditions within specified boundaries
- Major change of entrance or access roads
- Land acquisition
- Establishment or relocation of an instrument landing system, or an approach lighting system
- Development involving historic sites, Section 4(f) land, farmland, wetlands, coastal zones, floodplains, or endangered or threatened species

Master Planning Period 2020 Proposed Development

Under the current Master Plan Update, it is possible that the improvements proposed within the planning window will require further environmental studies. The primary development projects, which may drive this need include a 391-foot runway extension, land acquisition, and parallel taxiway construction.

The following summarizes the most significant airport improvements proposed for the Greenlee County Airport during the master planning period (through 2020)

- Install precision approach path indicators (PAPIs) on Runway 7-25
- Install new security and game fencing and security warning signs
- Install AWOS III
- Continue pavement preservation on all airfield pavements



- Extend Runway 7-25 from 4,989 to 5,280 feet to accommodate 95% of the small aircraft fleet and some larger aircraft (12,500 pounds or more)
- Install apron lighting
- Relocate power poles, residence, and buildings to mitigate protected airspace obstructions
- Install GPS system for non-precision approach
- Construct parallel taxiway to Runway 7-25
- Acquire land
- Install additional terminal area/apron security fencing, lighting and controlled access automatic sliding gate with card reader system
- Conduct comprehensive drainage study & improve drainage airport-wide
- Upgrade airport signage

These projects and others are described in more detail in Chapter 8.

Contingency Development

Contingency development in this master plan has been defined as development driven by unanticipated demand or economic development efforts such as the Federal Prison scenario (see previous chapters). While these contingency development projects are not specifically a part of the airport's future capital improvement program, possible facility locations are sited and mentioned here for long-term planning purposes only. These contingency projects include the following:

- Expand terminal
- Expand terminal area aircraft parking apron
- Construct additional aircraft hangars or shades
- Environmental assessment and land acquisition
- Relocate/realign SR 78 for new Runway 18-36
- Design/construct new Runway 18-36
- Design/construct new partial parallel taxiway to Runway 18-36
- Construct south side access and support infrastructure
- Construct Federal Prison facility, aircraft apron, auto parking
- Expand terminal area aircraft parking apron
- Construct helipad/ helicopter operations area
- Develop aviation/ non-aviation industrial area
- Purchase additional ARFF equipment for B727 operations

Environmental Evaluation Categories

Noise

Greenlee County Airport operations for 2000 (base year) were estimated at 6,726. Projected total operations for the year 2020 are 8,210. Based on these forecasts, potential areas of impact related to noise were examined through the development of noise exposure patterns or contours. To identify the land uses potentially impacted, aircraft noise contours are overlaid on land use maps for the airport and vicinity. The operational levels and aircraft mix in Chapter 3, Aviation Demand Forecasts, were used in the database which produced the contours presented in Chapter 7, Airport Plans. The methodology for analyzing aircraft noise for any Master Plan involves the following:

- The use of noise descriptors developed for airport noise analysis (i.e. Day-Night Average Sound Level (DNL) expressed as an average noise level on the basis of annual aircraft operations for a calendar year). DNL is considered to be the best methodology available for depicting aircraft noise exposure.
- Development of basic data and assumptions as input to the Integrated Noise Model (INM).

- Application of the INM that generate noise exposure contours (estimates for aircraft noise levels at finite points). After computing the noise level at each point, the INM produces contours by “connecting the dots.”

Standards of airport land use compatibility planning for use in the development of airports were developed based on the FAA’s aircraft noise exposure (DNL contour) map results. An example of the ‘generalized land use compatibility guidelines’ is listed below:

Land use guidance zone	Noise exposure class	DNL	Acceptable land use
A	Minimal exposure	0 to 55	All uses acceptable
B	Moderate exposure	55 to 65	Residential, Public Use, Recreational
C	Significant exposure	65 to 75	Commercial/Office, Manufacturing, Recreational
D	Severe exposure	Above 75	Manufacturing, Limited Commercial

According to FAA Order 5050.4A (Airport Environmental Handbook, p. 28), no noise analysis is needed for proposals involving Design Group I and II airplanes on utility or transport type airports whose forecast operations in the period covered by the environmental assessment do not exceed 90,000 adjusted propeller operations or 700 annual adjusted jet operations. These numbers of propeller aircraft operations result in cumulative noise levels, which do not exceed 60 DNL more than 5,500 feet from start of takeoff roll or 65 DNL on the runway itself. Although this implies that no noise analysis is needed for Greenlee County Airport, noise contours are produced as part of the master planning effort to serve as a baseline for future noise and land use issues.

No significant residential development exists around the airport boundary. However, some residential development does exist to the south approximately 1.2 miles from the airport. Other residential development in the vicinity of the airport includes the Loma Linda Subdivision approximately 3½ miles to the north and the Verde Lee Subdivision more than four miles to the northwest. The Towns of Clifton and Morenci are located 8½ miles to the north. Thus, residential overflight is generally avoided during airport approaches and departures.

FAA Integrated Noise Model

The following discusses the results and implications of the FAA’s Integrated Noise Model (INM) for Greenlee County Airport’s existing and future aircraft activity. Chapter 7 includes the Off-Airport Land Use/Noise Maps, which graphically depict the noise contours for Greenlee County.

The primary cause of incompatibility between an airport and the surrounding community is aircraft noise. Noise-sensitive development often surrounds an airport before the problem is recognized. Noise is a major source of environmental pollution and represents a threat to the serenity and quality of life for those individuals exposed to it.

The degree of which people will suffer from the nuisance of aircraft noise varies depending on their activities at any given time. While people are less disturbed by noise when they are driving, working, or shopping, they are more disturbed when they are at home. Many residents living near airports already complain that aircraft noise is



disturbing regardless of whether their home is inside what is considered an incompatible "noise contour" around an airport.

While FAA has published noise compatibility guidelines, they explicitly state that determination of noise compatibility and regulation of land use are purely local responsibilities. There are variations in human tolerance to aircraft noise. For example, it may be tolerated more by people living in a noisier urban environment than by people living in rural communities.

Methodology

To define the effect of aircraft-generated noise on a community, an effective and appropriate measure of cumulative noise exposure is needed. The Federal Aviation Administration Integrated Noise Model (INM 6.0c) was used to measure noise in this study. The Integrated Noise Model, over a 24-hour period, accounts for separate aircraft flying along flight tracks identified as straight-line or curved segments. These flight tracks are coupled with other data relating to noise, slant range, and engine thrust for each distinct aircraft type in the fleet mix to provide a cumulative measure of daily noise, with a penalty for nighttime aircraft activity (Day-Night Sound Level [DNL] metric). This methodology is consistent with existing measurement technologies. This methodology has been adopted by the FAA in response to the requirements of the Airport Safety and Noise Abatement Act of 1979 for a standardized noise system and is also recognized by the Environmental Protection Agency (EPA), and the Department of Housing and Urban Development (HUD) as an appropriate measure of cumulative noise exposure.

Noise is expressed as the Day-Night Average Sound Level, or DNL (formerly referred to as Ldn). DNL is the national standard accepted by the FAA for describing cumulative noise exposure and identifying noise/land use compatibility issues. DNL is the average noise level in decibels (dB) over a full 24-hour period with a 10-decibel (dB) penalty applied to noise events occurring at night (10:00 p.m. to 7:00 a.m.). DNL contours do not represent actual noise conditions present on any specific day or absolute boundaries of acceptability in personal response to noise.

Application of the DNL measurement methodology produces a series of noise level contour lines (DNL contours) which depict noise levels. These are superimposed on a map of the airport and its environs. Contour lines are a summation of all the noise produced by aircraft operations for a year. The DNL levels for Greenlee County Airport use forecast information pertaining to daily aircraft operations, and actual runway utilization, flight track utilization, and aircraft flight track profiles. DNL mapping is primarily a planning tool. Noise exposure contours should be viewed as a means for comparing average noise impacts, not precisely defining them relative to a specific location at a specific time.

Integrated Noise Model (INM 6.0c) Input Data

Noise modeling for the Greenlee County Airport used the following type of information as input.

- Existing (2000) and forecast operations (through 2020)
- Runway utilization by departure-arrival track usage
- Day/night operations split
- Touch-n-go (T&G) operations
- Flight tracks for arrivals, departures, and T&G's
- Airport Elevation
- Mean Maximum Temperature

Since Greenlee County does not have an air traffic control tower, some operational information used for the INM Model had to be estimated. Estimates were prepared using input from all available sources as identified earlier in Chapters 2 and 3.

Noise Modeling Output

For the purpose of this study, a set of four noise contours were modeled to include the 55, 60, 65, and 75 DNL. These contours were modeled for the base year (2000) and the end of the planning period (2020).

The Off-Airport Land Use/Noise Maps, (see Chapter 7) illustrate the 2000 and 2020 noise contours, respectively. The existing off-airport land use served as the base sheet for the contours to provide a better gauge of the potential noise impacts. As shown, the 75, 65, and 60 DNL contours are contained on the airport and near the runway for both the base year (2000) and 2020 conditions – only the 55 DNL contour extends approximately 2,000 feet from Runway 25 end.

While FAA guidance states that all land uses are compatible with levels below 65 DNL, it is important to reiterate that this does not imply that the population beyond the 65 DNL contour will not experience noise. In fact, there are many airports receiving significant noise complaints and airport opposition from a population well outside the 65 DNL. Further, many of the residents located adjacent to these airports were not complaining until airport activity grew – typically synonymous with community growth. Thus, those land uses that are the most sensitive to noise should be carefully sited with long-term growth in mind. Such noise-sensitive land uses include residential areas, schools, hospitals, churches, and auditoriums.

Compatible Land Use

The compatibility of existing and planned land uses in the vicinity of an airport is generally associated with the level of noise impact related to the airport. The FAA has developed guidelines for land-use compatibility based on noise levels and the nature of the land use being impacted. Commercial, industrial, and most public uses are considered compatible with airport operations, as long as they are consistent with performance standards of Federal Aviation Regulation (FAR) Part 77 relative to height and safety. Residential use is compatible in areas with less than 65 DNL noise. Therefore, the land use in the vicinity of the Greenlee County Airport is compatible with current and forecast airport operations. However, it is recommended that the County continue efforts to protect the airport environs with the submittal of a FAA Form 7460-1, Notice of Proposed Construction (see Appendix D) for all future development on and around the airport, and the adoption of a pre-defined airport influence area (AIA). Chapter 7, Airport Plans presents the FAR Part 77 airspace surfaces for Greenlee County Airport as well as the proposed airport influence area (AIA) recommended for County adoption.

Social Impacts

The continued operation of the Greenlee County Airport will not require relocation of residences or businesses, and surface transportation routes for the public will not be altered outside the airport grounds. Based on the preferred development alternative selected by the Planning Advisory Committee (PAC) for the 20-year planning period (Chapter 5), no adverse social impacts or community disruptions are anticipated. The overall effect of the proposed improvements and the continued operation of the airport will be the continued availability of air access to the Clifton/Morenci area for private, military, government agency and other business-related aircraft.

It should be noted that “contingency development” previously identified in Chapter 5 for the Federal Prison scenario does include the relocation/realignment of a portion of State Route 78.



Induced Socioeconomic Impacts

This category refers to impacts such as shifts in business and economic activity, demands on public services, or patterns of population growth associated with major airport development proposals. Although there are ongoing economic development efforts of the County and region, the proposed airport development complements these efforts and without any significant or negative socioeconomic impacts.

Development plans for the Greenlee County Airport are aviation-demand driven. The purpose of the proposed improvements is to meet the design standards for the B-II aircraft family currently operating at the airport, to serve the more specific needs of the various airport users, and to accommodate the growing need for facility improvements such as hangars, apron area, terminal expansion, perimeter roadway, and improved technology. While continued development is necessary, all construction-related improvements to meet the 20-year planning period needs are contained on-airport.

The airport development efforts may induce positive socioeconomic impacts, but there are no major shifts in business and economic activity, demands on public services, or patterns of population growth anticipated.

Air Quality

National Ambient Air Quality Standards (NAAQS) have been established by the Environmental Protection Agency (EPA) for seven criteria pollutants; carbon monoxide, lead, nitrogen dioxide, ozone, PM2.5, PM10 and sulfur dioxide. For each of these (except carbon monoxide), the EPA has adopted Primary standards to protect public health and Secondary standards to protect public welfare. Each state must adopt standards at least as strict as the federal standards. The standards adopted by Arizona are the same as those utilized by EPA. The Greenlee County Airport is located within an area that complies with all NAAQ Standards.

Arizona does not have indirect source review (ISR) requirements. Because the Greenlee County Airport has less than 180,000 operations forecast annually, it is not subject to air quality analysis (FAA Order 5050.4A, Airport Environmental Handbook, p. 33). No impacts to air quality are anticipated to result from the proposed improvements and the continued operation of the Greenlee County Airport.

In January 2002, a letter was sent to Arizona Department of Environmental Quality's Air Assessment Section (see Appendix B) to notify their office of the airport master planning effort and request any preliminary comments regarding concerns associated with the proposed development. Comments, once received, will be incorporated into the final draft of the Master Plan.

Water Quality

The Greenlee County Airport's surface runoff drains into Gila River and its tributaries. Normal contaminants from airport operations are petroleum products, but the Greenlee County Airport has been successful in handling and controlling such contaminants. No streams or lakes will be disturbed by construction. The potential for degradation of local water quality resulting from the proposed improvements and continued operation of the Greenlee County Airport is negligible.

In January 2002, a letter was sent to Arizona Department of Environmental Quality's Hydrologic Support & Assessment Section (see Appendix B) to notify their office of the airport master planning effort and request any preliminary comments regarding concerns associated with the proposed development. Comments, once received, will be incorporated into the final draft of the Master Plan.

Special Land Uses, DOT Section 4(F)

Section 4(f) of the Department of Transportation (DOT) Act specifies that no project will be approved that requires use of any publicly owned land from a Public Park, recreation area, or

wildlife refuge. There are no special land uses, as defined by the Department of Transportation that exist within the potential impact area of the Greenlee County Airport. The proposed improvements and the continued operation of the Greenlee County Airport will have no impacts on Special Use land or Section 4(f) lands.

Cultural Resources

The State Historic Preservation Officer (SHPO) was contacted in January 2002 (see Appendix B) for information regarding potential significant cultural resources in or near the project area to determine whether the airport project area has been surveyed for cultural resources. It is anticipated that no impacts will be associated with the proposed improvements and land-disturbing activities. However, a cultural resource survey under the National Historic Preservation Act may still be required as part of any future Environmental Assessments for project-specific development.

Once comments from the SHPO are received, they will be incorporated into the final draft of the Master Plan.

Biotic Communities

The Greenlee County Airport surroundings include high mountain ranges, river valleys, and desert terrain. None of the proposed plans for improvement or expansion of airport facilities anticipate disturbing the surrounding habitat.

Threatened and Endangered Species

The U.S. Fish & Wildlife Service (USFWS) and the Arizona Game & Fish Department (AGFD) were contacted for preliminary comments regarding potential impacts associated with the proposed development of Greenlee County. Once the list of the endangered, threatened, proposed, and candidate species potentially occurring anywhere in Greenlee County is received, the list will be incorporated into Appendix B.

Wetlands

Airport property has not been evaluated for the presence of wetlands. However, neither the proposed improvements nor the continued operation of the Greenlee County Airport are anticipated to result in disturbance of any wetlands. However, any future project-specific environmental assessments should include contact with the Army Corps of Engineers.

Floodplains

Greenlee County Airport is not located within or adjacent to a floodplain. The proposed improvements and continued operation of the Greenlee County Airport will not indirectly support secondary development within a floodplain. There will be no floodplain impacts.

Shoreline Management

A shoreline management program does not cover the vicinity of Greenlee County; thus, evaluation under this category is not applicable.

Coastal Barriers

This impact category refers exclusively to islands on the Atlantic and Gulf coasts; thus, it is not applicable to development at the Greenlee County Airport.

Wild and Scenic Rivers

There are no wild or scenic rivers in the vicinity of the Greenlee County Airport which could be impacted by its continued operation or any future modification or expansion.

Farmland

The Farmland Protection Policy Act (FPPA) directs federal agencies to take into account the adverse effects of federal programs on the preservation of Prime or Unique Farmland. The Act

protects such farmland from being converted, directly or indirectly, to nonagricultural uses. No farmland adjoins the Greenlee County Airport property. Neither the proposed improvements nor the continued operation of the Greenlee County Airport will impact farmland in the Clifton/Morenci area.

Energy Supply and Natural Resources

The operation of the Greenlee County Airport requires minimal consumption of energy resources. Power generating capacity in the Clifton/Morenci area is sufficient to support the increased power needed for the proposed airport improvements. The proposed improvements do not require any special natural resources. However, in January 2002, a letter was sent to the USDA Natural Resource Conservation Service (see Appendix B) to notify their office of the airport master planning effort and request any preliminary comments regarding concerns associated with the proposed development. Comments, once received, will be incorporated into the final draft of the Master Plan.

Light Emissions

The Greenlee County Airport is currently lighted by a medium intensity runway lighting (MIRL) system. Proposed lighting-related improvements include a medium intensity taxiway lighting (MITL) system and additional security lighting in the terminal and apron area. However, the low-mounting and location of these lighting systems as well as their location are not anticipated to cause a significant increase in light emissions.

Solid Waste Impacts

The activity generated by the proposed improvements or the continued operation of the Greenlee County Airport is not expected to create an increase in solid waste sufficient to cause an adverse impact on disposal facilities.

The FAA and EPA regulations indicate that solid waste sites should not be located within 5,000 feet of an airport utilized by smaller piston-engine aircraft nor within 10,000 feet for turbine-powered aircraft. No landfills have been identified within these distances from the Greenlee County Airport. The Loma Linda Landfill is located more than three miles north of the airport.

Construction Impacts

The volume of construction activity required to implement the proposed improvements to the Greenlee County Airport is small. However, to ensure construction impacts are minimized, the proposed construction projects will incorporate in their plans and specifications the provisions of FAA Advisory Circular 150/5370 10, Standards for Specifying Construction of Airports, (change 10, Item P 156 Temporary Air and Water Pollution, Soil Erosion, and Siltation Control).

Conclusion

To date, correspondence with environmental agencies, the preliminary review of existing project area environmental-related documents, and the preliminary review of the physical project area environment, has not resulted in the identification of any potentially significant impacts associated with the proposed airport improvements.

The proposed development projects, which may require an environmental assessment or further environmental evaluation include the proposed land acquisition, the proposed extension of Runway 7-25, and the proposed construction of a parallel taxiway system.