

SECTION 5: ENVIRONMENTAL FACTORS

GILA BEND MUNICIPAL AIRPORT AIRPORT MASTER PLAN 2003



INTRODUCTION

The National Environmental Policy Act (NEPA) requires that all new airport construction projects be evaluated in terms of possible environmental impacts. Thus, it is important in the master planning process to identify the environmental issues which may need to be addressed prior to airport development.

Federal actions fall into one of three categories:

- C Categorical Exclusions;
- C Actions normally requiring an Environmental Assessment (EA); and
- C Actions normally requiring an Environmental Impact Statement (EIS).

In general terms, actions categorically excluded are those actions which are found to have no potential for significant environmental impact. The following items would normally be categorically excluded unless extraordinary circumstances are identified by the FAA which would create a requirement for an Environmental Assessment. ("Extraordinary circumstances" include opposition by federal, state or local government agencies, or by a significant number of persons who would be affected by the action, as well as any obvious circumstance which may indicate the potential for environmental impact.)

- C Runway reconstruction or repair work where the runway's alignment, length, capacity and classification are not affected;
- C Construction or repair of taxiways, aprons or loading ramps;
- C Installation or upgrade of airfield lighting systems, including runway and taxiway edge lighting systems, runway end identifier lights (REIL), visual approach aids (VASI, PAPI), rotating beacons, and electrical distribution systems;
- C Installation of miscellaneous items including segmented circles, wind or landing direction indicators, weather stations, and fencing;
- C Construction or expansion of buildings and passenger handling facilities, including general aviation arrival/departure building and hangars;

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- C Construction, relocation or repair of entrance and service roads;
- C Obstruction removal on airport property;
- C Erosion control actions with no off-airport impacts;
- C Landscaping or construction of airport jet blast and/or noise mitigation barriers, as well as projects to carry out noise compatibility programs;
- C Land acquisitions and/or relocations associated with any of the above listed items.

Federal release of airport land, removal of a displaced threshold, airspace determinations, airport planning projects, noise compatibility programs, acquisition of security equipment required under 14 CFR Part 107 or safety equipment required under 14 CFR Part 139, acquisition of snow removal equipment, airport certifications, and preliminary or tentative engineering or design actions are also categorically excluded.

Actions normally requiring an Environmental Assessment are those which have been found by experience to sometimes have significant environmental impacts. Included actions are:

- C Airport location or relocation (construction of a new airport);
- C Construction of a new runway;
- C Major runway extension;
- C Runway strengthening which would result in a 1.5 Ldn or greater increase in noise over any noise sensitive area located within the 65 Ldn noise exposure contour;
- C Entrance or service road development which would adversely affect the capacity of other public roads.
- C Land acquisition associated with any of the above-listed items, or land acquisitions which result in relocation of residential units when there is evidence of insufficient replacement dwellings or major disruption of business activities;
- C Land acquisition which involves land covered under Section 4(f) of the DOT Act (public owned land from a public park, recreation area or wildlife or waterfowl refuge, or a historical site of local state or national significance);
- C Establishment or relocation of an instrument landing system, or an approach lighting system;
- C Any action which would effect property included (or eligible for inclusion) on the National Register of Historic Places, property of state, local, or national historical, architectural, archeological, or cultural significance;
- C Land acquisitions which involve significant conversion of farmland

Actions determined to have significant impacts during preparation of the Environmental Assessment will be required to be addressed by an Environmental Impact Statement (EIS).

The preparation of the Environmental Assessment is the responsibility of the airport sponsor. Based upon the results of the Environmental Assessment, the FAA would either prepare an Environmental Impact Statement (EIS) or would issue a "Finding Of No Significant Impact" (FONSI).

Federal regulations require that a sponsor seeking a grant for airport improvements must prepare and submit an Airport Layout Plan (ALP), showing detailed information regarding the existing and proposed facility, along with an Environmental Assessment prepared in accordance with FAA Order 5050.4, if an assessment is required.

The proposed 20-year improvement plan for the Gila Bend Municipal Airport includes the future extension of Runway 4/22 from its present length of 5,200 feet to an ultimate length of 6,500 feet, a 1,300' extension. When the runway is extended, its pavement would also be strengthened to accommodate 30,000 pound Single Wheel Gear (SWG) aircraft. The airport would remain an ARC B-II facility. This proposed extension would require the preparation of an EA.

POTENTIAL ENVIRONMENTAL IMPACTS

The areas of potential impact which must be addressed in an Environmental Assessment, per FAA Order 5050.4, are as follows:

- A. Aircraft Noise
- B. Compatible Land Use
- C. Social Impacts
- D. Induced Socioeconomic Impacts
- E. Air Quality
- F. Water Quality
- G. Impacts upon Public Recreation Areas and Historical/Cultural Resources
- H. Biotic Communities - Flora and Fauna
- I. Endangered and Threatened Species of Flora and Fauna
- J. Wetlands
- K. Floodplains
- L. Coastal Zone Management Programs and Coastal Barriers
- M. Wild and Scenic Rivers
- N. Conversion of Farmland
- O. Energy Supply and Natural Resources

- P. Light Emissions
- Q. Solid Waste Impacts
- R. Construction Impacts
- S. Environmental Justice

A general discussion of each of these areas of potential impact is included in the following narrative.

Aircraft Noise:

The “DNL” noise metric (“Day-Night Average Sound Level” - sometimes called “Ldn”) is defined as the 24 hour average of an energy summation of A-weighted decibel levels (dbA), with night operations weighted by a 10 decibel penalty.

The Federal Aviation Administration defines 65 DNL as the threshold of significance for noise exposure impacts, and requires that the Integrated Noise Model (INM) version 6.0b computer program be used to define noise exposure levels.

The Department of Housing and Urban Development (HUD), has published noise abatement and control standards in its Circular 1390.2 in an effort to separate uncontrollable noise sources from residential and other noise sensitive areas, and to prohibit HUD support for construction within sites determined to have unfavorable noise exposure conditions. A rating of less than DNL 65 is considered acceptable for residential development. DNL 65 to 75 is defined as discretionary and a rating of more than DNL 75 is considered unacceptable for residential development.

A noise analysis is not required by the Federal Aviation Administration for airport proposals which involve utility or transport airports whose forecast annual operations within the period covered by an Environmental Assessment do not exceed 90,000 annual propeller operations or 700 jet operations. According to the forecasts developed in Section 2, activity will remain well below this threshold level during the period under study. Therefore, a noise analysis will not be necessary in the runway extension EA process.

Compatible Land Use:

Land-use compatibility conflicts are a common problem around many airports and smaller General Aviation facilities. In urban areas, as well as some rural settings, airport owners find that essential expansion to meet the demands of airport traffic is difficult to achieve due to the nearby development of incompatible land uses.

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The issue of aircraft noise is generally the most apparent perceived environmental impact upon the surrounding community.

Conflicts may also exist in the protection of runway approach and transition zones to assure the safety of both the flying public and the adjacent property owners. Adequate land for this use should be either acquired in fee specifically for airport use (as is recommended in this Master Plan), or controlled by aviation easements,.

The Airport Environmental Handbook states that an Environmental Assessment shall document “*the required sponsors assurance under section 511(a)(5) of the 1982 Airport Act that appropriate action, including the adoption of zoning laws, has been or will be taken, to the extent reasonable to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft. The assurance must be related to existing and planned land uses*”. (Page 31, paragraph 2b). Ideally, the Town should undertake a land use study with an ultimate objective to create additional land use controls to reduce the potential for impact to future residential and high density population areas.

There are several sources of information available for the planning and implementation of land use controls. These are:

1. The Arizona Airports Land Use Compatibility Study, Volume V of the Arizona Aviation System Plan (December 1992), prepared by the Arizona Department of Transportation, Aeronautics Division.
2. Appendix A, Federal Aviation Regulations (FAR), Part 150.
3. FAA Advisory Circular 150/5050-6, Airport-Land Use Compatibility Planning.
4. FAA Advisory Circular 150/5020-1, Noise Control and Compatibility Planning for Airports.
5. FAA Advisory Circular 150/5190-4A, A Model Zoning Ordinance to Limit Height of Objects Around Airports.

As a minimum, the airport-related ordinances that should be considered for land use control are:

- C Height hazard ordinances
- C Noise ordinances

C Land use ordinances

The land surrounding the airport is either Arizona State Trust Land, or Bureau of Land Management (BLM). The adjacent BLM land is included in a Recreational Lease held by the Town of Gila Bend. All adjacent land is vacant. There are no existing incompatible land uses.

SOCIAL IMPACTS

These are impacts which arise from the disruption of communities, relocation of persons, changes in employment patterns and changes in transportation patterns.

The proposed extension of Runway 4/22 will be located on currently undeveloped land. No disruption of existing communities, relocation of persons, changes in employment pattern, or changes in transportation patterns are anticipated by this development.

No significant Social Impacts are indicated. However, because the airport is located in an area that may experience rapid development in the near future, it is recommended that the Town begin area land use planning that will allow for orderly development around and near the new airport.

Induced Socioeconomic Impacts:

These secondary or indirect impacts involve shifts in population, changes in economic climate, or shifts in levels of public service demand. The effects are directly proportional to the scope of the project under consideration.

As noted above, the future runway extension will be located in an area that is currently undeveloped. While the airport will not itself cause any shifts in population, changes in economic climate, or shifts in levels of public service demand, it will play a part in defining the character of the area as the Phoenix metropolitan area continues to expand toward Gila Bend.

Air Quality:

The Federal Aviation Administration, through FAA Order 5050.4A, Airport Environmental Handbook, includes an established procedure which is followed in order to determine whether an air quality analysis is necessary for a proposed airport development action.

The initial step in this process is to determine whether the anticipated project

involves airport location, runway development or other physical airside and/or landside improvements which increase airport capacity.

Assuming that the increase in activity shown in the forecasts might indicate a potential for increased impacts to air quality, the next step in the process is the determination of whether or not the airport is within a state within direct source review (ISR)

The state of Arizona is not an ISR state. This being the case, the threshold criteria contained in the FAA Airport Environmental Handbook must be examined in order to determine if an assessment of air quality is required. According to the Handbook, no air quality analysis is required if the levels of activity forecast in the time frame of the proposed action are below either of the following.

- C For commercial service airports: Less than 1.3 million annual passenger and less than 180,000 annual general aviation operations.

- C For general aviation airports: Less than 180,000 forecast annual operations.

For the planning year 2023, the high range of the total annual operations forecast for the airport is approximately 21,700 operations. It is evident from this that neither of these criteria will be exceeded. An air quality assessment should not be required.

The 1982 Airport Act requires that Airport Improvement Program applications for projects involving airport location, runway location, or a major runway extension shall not be approved unless the governor of the state in which the project is located certifies that there is “reasonable assurance” that the project will be located, designed, constructed and operated in compliance with applicable air quality standards. The proposed runway extension will require preparation of an EA. The EA process will include review by appropriate state agencies, concluding with an air quality certification from the governor’s office.

Water Quality:

The 1982 Airport Act also requires that Federal Airport Improvement Program (AIP) applications for projects involving airport location, runway location, or a major runway extension shall not be approved unless the governor of the state in which the project is located certifies that there is “reasonable assurance” that the project will be located, designed, constructed, and operated in compliance with all applicable water quality standards. As with the air quality assurance for the proposed runway extension, this certification should be applied for as part of an EA

process, through the Arizona Department of Environmental Quality (ADEQ).

The Airport Environmental Handbook states that any Environmental Assessment required for an airport activity shall include descriptions of design, mitigation measures and construction controls to indicate that any water quality standards and permit requirements are met on a Federal, State, and/or local level. This stipulation can apply to storm and sanitary sewers, water supply and waste treatment, erosion controls, fuel spill containing, and drainage design.

A storm water permit must be applied for through ADEQ prior to commencement of construction activities if clearing, grubbing and excavation activities disturb more than five acres of land. Grading of less than five acres will also be required to be permitted if it is part of a larger development plan.

If construction activities involve channelization or earthmoving within a "Water of the United States", a 404 permit will need to be obtained from the U.S. Army Corps of Engineers prior to commencement of construction.

Potential short-term impacts to water quality caused by construction activity (erosion and sediment transport) must be addressed for each construction project in specifications (see also the section entitled Construction Impacts, below).

Impacts Upon Public Recreation Areas and Historical/Cultural Resources:

Section 4(f) of the DOT Act states that the *"Secretary shall not approve any program or project which requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state or local significance as determined by officials having jurisdiction thereof unless there is no feasible and prudent alternative to the use of such land and such program or project includes all possible planning to minimize harm resulting from the use."*

The proposed improvements will have no significant impacts upon existing parks, established waterfowl/wildlife refuges or recreation areas.

An Archaeological Survey should be included as part of the Environmental Assessment for the project.

Biotic Communities - Flora and Fauna:

This section considers the impacts of proposed projects on biotic communities and has overlapping requirements with the next two sections (Threatened and

Endangered Species and Wetlands). The requirements of this section are as follows:

1. If a proposed project takes or impacts a publicly-owned wildlife refuge, a special study needs to be prepared.

This requirement does not apply to this proposal.

2. For any proposed project it is necessary to consider the impacts on endangered and threatened species, if any (refer to the section entitled Threatened and Endangered Species, below).
3. If the proposed project would affect water resources (i.e., wetlands, groundwater, impoundment, diversion, deepening, controlling, modifying, polluting, dredging, or filling of any stream or body of water), the Fish and Wildlife Coordination Act applies. Consultation should be initiated with both the U.S. Fish and Wildlife Service and with the Arizona Game and Fish Department. Letters should be sought and obtained from both agencies to determine if any proposed actions will damage wildlife resources and to determine mitigating measures, if necessary. (Refer to the section entitled Wetlands, below).

The Airport Environmental Handbook states (Page 42 - Section 9d1): *“If the proposal would impact only man-dominated areas such as previously disturbed airport property, populated areas, or farmland, it may be assumed that there would be no significant impact on biotic communities.”* Section 9d2 states that if the project *“would impact other than man-dominated areas but the impacts would be transient rather than permanent, such as dislocation or other impacts due to construction activities, it may be assumed that there would be no significant impact on biotic communities. The environmental assessment shall document the transient nature of the impacts and any mitigation measure.”*

It is recommended that the subject of potential impacts to biotic communities be addressed in the Environmental Assessment, which should include a Biological Assessment Study. The proposed construction activities (specifically grading) may also have some level of transient impact.

Threatened and Endangered Species:

It is necessary for any proposed project to consider the impacts on Threatened and Endangered Species. An “Endangered Species” is defined as any member of the animal or plant kingdom determined to be in danger of extinction throughout all or

a significant portion of its range.

A “Threatened Species” is defined as any member of the plant or animal kingdom which are likely to become endangered in the foreseeable future.

It is not known whether any protected species occur at the proposed project site. Therefore, it is recommended that the subject of potential impacts to biotic communities be addressed in the Environmental Assessment, which should include a Biological Assessment Study (as recommended above), as well as an Arizona Native Plants Site Examination Survey.

The proposed construction activities (specifically grading) may also have some level of transient impact.

Wetlands:

Wetlands are defined in Executive Order 11990, *“Protection of Wetlands”*, as *“those areas that are inundated by surface or ground water with a frequency sufficient to support, and under normal circumstances does or would support, a prevalence of vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, and natural ponds.”*

Visual observation of the project area indicated that there are no apparent wetlands that would be disturbed by the proposed development. The National Wetlands Inventory (NWI) Internet mapping database was also consulted. The NWI maps indicate that no wetlands exist in the project area.

Floodplains:

Floodplains are defined by Executive Order 11988, Floodplain Management, as the lowland and relatively flat areas adjoining coastal water “...including a minimum, that area subject to a one percent or greater chance of flooding in any given year...”, that is, an area which would be inundated by a 100-year flood. If a proposed development involves a 100 year floodplain, mitigating measures must be investigated in order to avoid significant changes to the drainage system.

The National Flood Insurance Program’s Flood Insurance Rate Maps (FIRM) for the site area indicate that the proposed development is not located within a floodplain. Therefore, no significant impacts are anticipated.

Since there are numerous washes running through the project area, the State of Arizona Division of Emergency Management will probably require a floodplain delineation prior to development.

Coastal Zone Management Programs and Coastal Barriers:

The Airport Environmental Handbook states (page 53, Section 14a), "*The Coastal Barriers Resources Act of 1982...prohibits...Federal financial assistance for development within the Coastal Barrier Resources System which consists of undeveloped coastal barriers along the Atlantic and Gulf Coasts*".

The project area is not located within the Coastal Barrier Resource System.

Wild and Scenic Rivers:

The Wild and Scenic Rivers Act describes those river areas eligible for protection from development. As a general rule these rivers possess outstanding scenic, recreational, geological, fish and wildlife, historical, cultural, or other similar value. There are no Wild and Scenic Rivers located in the vicinity of the proposed airport.

Conversion of Farmland:

The Farmland Protection Policy Act (FPPA) authorizes the U.S. Department of Agriculture to develop criteria for identifying the effects of Federal programs upon the conversion of farmland to uses other than agriculture.

The project site is located in an area of undeveloped State Trust Land and BLM land. The proposed actions included in this Master Plan will not affect any existing farmland.

Energy Supply and Natural Resources:

For most general aviation and non-hub air carrier airport actions, changes in energy demands or other natural resource consumption will not result in significant impacts. This is the case for the proposed airport development.

As noted above, the airport is located in an area that is currently undeveloped, but is an area that may experience rapid development as the Phoenix metropolitan area continues to expand toward Gila Bend. While the airport will not itself cause any significant changes in existing demands upon energy supply and natural resources, it will be a contributor to increased demand as the area develops.

Light Emissions:

Aviation lighting required for the purpose of obstruction marking, security of parked aircraft and vehicles, and visual aids to navigation are the main source of light emissions emanating from airports. An analysis is necessary only if a proposal would introduce new airport lighting facilities which might affect nearby residential or other sensitive land uses.

The Airport Environmental Handbook states that establishment of an Instrument Landing System (ILS) or Approach Lighting System (ALS) is an action normally requiring environmental assessment. The Master Plan for the new facility has not programmed an ILS or ALS.

Solid Waste Impacts:

Airport development actions which relate only to construction or expansion of runways, taxiways, and related facilities do not normally include any direct relationship to solid waste collection, control, or disposal. All of the "airside" improvements proposed for the airport fit into this category. Therefore, no significant impacts to solid waste generation are anticipated.

Any solid waste disposal facility (i.e., sanitary landfill, transfer station, etc.) which is located within 5,000 feet of all runways planned to be used by piston-powered aircraft, or within 10,000 feet of all runways planned to be used by turbine-powered aircraft is considered by the FAA to be an incompatible land use because of the potential for conflicts between bird habitat and low-flying aircraft.

Any waste disposal facility which is located within a 5 mile radius of any runway end "*that attracts or sustains hazardous bird movements from feeding, water or roosting areas into, or across the runways and/or approach and departure patterns of aircraft*" is also considered to be incompatible. This determination is contained in paragraph 5 of FAA Order 5200.5A, FAA Guidance Concerning Sanitary Landfills On or Near Airports.

Reference to this potential hazard is also made in 40 CFR Part 257, Criteria for Classification of Solid Waste Disposal Facilities, section 257.3-8.

There are no existing or planned solid waste disposal sites within 10,000 feet of the proposed runway extension. Future area wide land use planning should address this issue in order to ensure that new disposal sites will not be developed within the airport influence area.

Construction Impacts:

Any construction project will generate short-term (transient) environmental impacts. These may include noise and air pollution (dust and exhaust emissions) from construction equipment on the site and traversing nearby neighborhoods, air pollution from burning of refuse, and water pollution from erosion and increased siltation of downstream bodies of water.

These potential impacts can be controlled by requirements and restrictions placed in the Contract Documents and Specifications for each project.

Potential erosion and siltation should be mitigated by incorporation of applicable federal and state standards into the construction contract specifications. Typically, this involves creation and implementation of a Storm Water Pollution Prevention Plan (SWPPP).

As a method of minimizing noise and air pollution caused by construction equipment, the contractor's equipment access be routed to avoid the most sensitive adjacent areas and to contain the adverse impacts as much as possible to the airport property.

The access routes and limitations should be defined on the construction plans and in the specifications, as appropriate.

Dust pollution should be specifically mitigated by requiring appropriate dust control measures as part of the construction specifications.

Coordination with the Arizona Department of Environmental Quality may be necessary during the development of construction plans and during the construction activities.

Improvements involving excavation could uncover archaeological, cultural or human skeletal remains. It is recommended that any set of contract documents and specifications include a provision for the contractor to stop work and to contact the State Historic Preservation Office in the event of a potential archeological, cultural or skeletal discovery.

If construction activities involve channelization or earthmoving within a "Water of the United States", a 404 permit will need to be obtained from the U.S. Army Corps of Engineers prior to commencement of construction.

Summary of Findings:

The proposed future extension of Runway 4/22 will require preparation of an Environmental Assessment (EA) and issuance of a FONSI. The EA for this project should address all applicable items listed in FAA Order 5050.4. Areas that may present the potential for significant impacts are as follows:

- C Compatible Land Use. The Town of Gila Bend should enact airport-related zoning ordinances to control the use of land surrounding the airport, as part of area wide land use planning in anticipation of development of the project area.
- C Impacts Upon Public Recreation Areas and Historical/Cultural Resources. An archaeological survey should be conducted as a part of the runway extension EA.
- C Biotic Communities - Flora and Fauna and Threatened and Endangered Species. A biological assessment and Arizona Native Plant Survey should be conducted as a part of the runway extension EA.
- C Wetlands, Water Quality, and Construction Impacts. A permit issued under Section 404 of the Clean Water Act may be necessary for any discharge of dredged or fill materials into the "waters of the United States". Activities that require a Section 404 permit include placing bank protection, temporary or permanent stockpiling of excavated material, grading roads, grading (including vegetative clearing operations) that involves the filling of low areas or leveling of land, constructing weirs or diversion dikes, constructing approach fills, and discharging dredged or fill material as a part of any other activity.
- C Air Quality and Construction Impacts. Dust control and other air quality mitigation practices should be implemented during construction activities. These should be included as part of the construction contract documents.