Chapter Five

# RECOMMENDED MASTER PLAN CONCEPT

The airport master plan for Chandler Municipal Airport (CHD) has progressed through a systematic and logical process with a goal of formulating a recommended 20-year development plan. The process began with an evaluation of existing and future operational demand, which aided in creating an assessment of future facility needs and were used to develop alternative facility plans. Each step in the planning process included the development of draft working papers, which have been presented and discussed at previous Planning Advisory Committee (PAC) meetings and public information workshops and are available on the project website (www.chandler.airportstudy.com).

In the previous chapter, several development alternatives were analyzed to explore options for the future growth and development of CHD. The development alternatives have been refined into a single recommended concept for the master plan. This chapter describes, in narrative and graphic form, the recommended direction for the future use and development of CHD.

The recommended concept provides the ability to meet the disparate needs of the array of airport operators. The goal of this plan is to ensure the airport can continue, and even improve, in its role of serving general aviation operators and military aviation in and around the City of Chandler and the Phoenix metropolitan area. The plan has been specifically tailored to support existing and future growth in all forms of potential aviation activity as the demand materializes.

The recommended airport development concept, as shown on **Exhibit 5A**, presents a long-term configuration for the airport, which preserves and enhances the role of the airport, while meeting Federal Aviation Administration (FAA) design standards. The phased implementation of the recommended development concept will be presented in Chapter Six. The following sections describe the key details of the recommended master plan concept.

## *AIRSIDE CONCEPT*

The airside plan generally considers those improvements related to the runway and taxiway system and navigational aids.

### DESIGN STANDARDS

The FAA has established design criteria to define the physical dimensions of runways and taxiways, as well as the imaginary surfaces surrounding them, to enhance the safe operation of aircraft at airports. These design standards also define the separation criteria for the placement of landside facilities.

As discussed previously, the design criteria primarily center on the airport's critical design aircraft. The critical aircraft is the most demanding aircraft, or family of aircraft, which currently, or are projected to, conduct 500 or more operations (takeoffs and landings) per year at the airport. Factors included in airport design are an aircraft's wingspan, approach speed, tail height and, in some cases, the instrument approach visibility minimums for each runway. The FAA has established the Runway Design Code (RDC) to relate these design aircraft factors to airfield design standards. The most restrictive RDC is also considered the overall Airport Reference Code (ARC).

While airfield elements, such as safety areas, must meet design standards associated with the applicable RDC, landside elements can be designed to accommodate specific categories of aircraft. For example, an airside taxiway must meet taxiway object free area (TOFA) for all aircraft types using the taxiway, while the taxilane to a T-hangar area only needs to meet width standards for smaller single and multi-engine piston aircraft expected to utilize the taxilane.

The applicable RDC and critical design aircraft for each runway at CHD in the existing and ultimate conditions, as established in Chapter Two, are summarized in **Table 5A**.

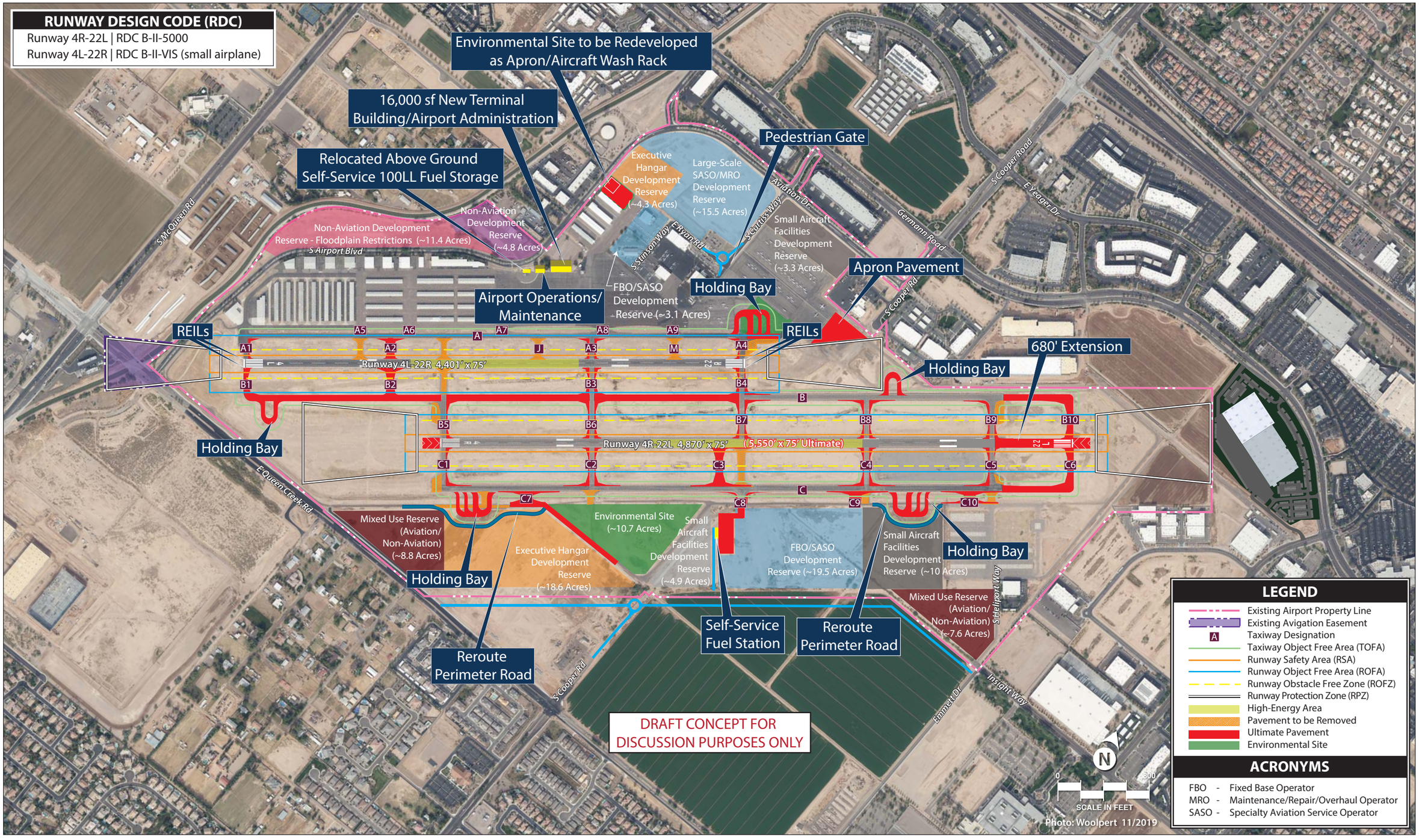
RUNWAY DESIGN CODE (RDC)
Runway 4R-22L | RDC B-II-5000
Runway 4L-22R | RDC B-II-VIS (small airplane)
Environmental Site to be Redeveloped as Apron/Aircraft Wash Rack
16,000 sf New Terminal Building/Airport Administration
Relocated Above Ground Self-Service 100LL Fuel Storage
Pedestrian Gate
Executive Hangar Development Reserve (~4.3 Acres)
Large-Scale SASO/MRO Development Reserve (~15.5 Acres)
Non-Aviation Development Reserve - Floodplain Restrictions (~11.4 Acres)
Non-Aviation Development Reserve (~4.8 Acres)
Small Aircraft Facilities Development Reserve (~3.3 Acres)
Apron Pavement
Airport Operations/ Maintenance
FBO/SASO Development Reserve (~3.1 Acres)
Holding Bay
REILs
680' Extension
Runway 4L-22R 4,401' x 75'
Runway 4R-22L 4,870' x 75' (5,550' x 75' Ultimate)
Holding Bay
Mixed Use Reserve (Aviation/ Non-Aviation) (~8.8 Acres)
Environmental Site (~10.7 Acres)
Small Aircraft Facilities Development Reserve (~4.9 Acres)
FBO/SASO Development Reserve (~19.5 Acres)
Small Aircraft Facilities Development Reserve (~10 Acres)
Mixed Use Reserve (Aviation/ Non-Aviation) (~7.6 Acres)
Executive Hangar Development Reserve (~18.6 Acres)
Holding Bay
Reroute Perimeter Road
Self-Service Fuel Station
Reroute Perimeter Road
DRAFT CONCEPT FOR DISCUSSION PURPOSES ONLY
S McQueen Rd
S Airport Blvd
E Queen Creek Rd
S Stinson Way
E Ryan Rd
S Curtiss Way
Aviation Dr
Germann Road
S Cooper Road
E Yeager Dr
S Cooper Rd
S Heliport Way
Emmett Dr
Insight Way
LEGEND
Existing Airport Property Line
Existing Avigation Easement
Taxiway Designation
Taxiway Object Free Area (TOFA)
Runway Safety Area (RSA)
Runway Object Free Area (ROFA)
Runway Obstacle Free Zone (ROFZ)
Runway Protection Zone (RPZ)
High-Energy Area
Pavement to be Removed
Ultimate Pavement
Environmental Site
ACRONYMS
FBO - Fixed Base Operator
MRO - Maintenance/Repair/Overhaul Operator
SASO - Specialty Aviation Service Operator
N
0
800
SCALE IN FEET
Photo: Woolpert 11/2019

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**TABLE 5A**
**Airport and Runway Classifications**
**Chandler Municipal Airport**

| | Runway 4R-22L (existing/ultimate) | Runway 4L-22R (existing/ultimate) |
|---|---|---|
| Airport Reference Code (ARC) | B-II | B-II (small airplane) |
| Critical Aircraft (Typ.) | Beechcraft King Air 200/300/350 (existing)<br>Cessna Citation Jet CJ4/Citation X (ultimate) | Beechcraft King Air C/F90 |
| Runway Design Code (RDC) | B-II-5000 | B-II-VIS (small airplane) |
| Approach Reference Code (APRC) | D/IV/5000 and D/V/5000 | B/II/VIS |
| Departure Reference Code (DPRC) | D/IV and D/V | B/II |
| Taxiway Design Group (TDG) | 2 | 2 |

*Source: FAA AC 150/5300-13A, Airport Design*

## PRIMARY RUNWAY 4R-22L

**Runway Designation** | A runway's designation is based upon its magnetic headings, which are determined by the magnetic declination for the area. The magnetic declination in the area of CHD is 10° 2'E1. The primary runway is oriented northeast/southwest with a true heading of 049°/229°. Adjusting for the magnetic declination, the current magnetic heading of the runway is 039°/219°. As a result, ***Runway 4R-22L should maintain this designation.***

**Runway Dimensions** | The primary runway is currently 4,870 feet long and 75 feet wide, meeting RDC B-II-5000 design standards. At these current dimensions, the runway is capable of safely accommodating all small general aviation aircraft. Business jets can also operate on this runway under moderate loading conditions with shorter trip lengths and during cool to warm temperatures. Longer trips and hot summer days significantly limit business jet capabilities. As a general aviation reliever airport, CHD's role is to relieve the larger airports in the region of general aviation traffic, including business jets. Increasing the utility of the runway to safely accommodate business jets will also expand CHD's market potential, attracting new itinerant operators, based aircraft, and businesses that provide services to business jet clients. For these reasons, ***a 680-foot extension of the runway is planned to achieve an ultimate length of 5,550 feet***.

Connected actions to the extension of Runway 4R-22L include the following items:

- Extensions to Taxiway B and Taxiway C to the ultimate runway end.
- Relocation of the PAPI-4 and runway end identifier light (REIL) units on the Runway 22L end.
- All new runway pavement would be equipped with medium intensity runway edge lighting (MIRL).
- The ultimate runway's declared distances[2] (TORA, TODA, ASDA, and LDA) would equal the full pavement length of 5,550 feet.

1 Source: NOAA, 02/06/2020.
2 Declared distances are described in detail in Chapter Four, Airside Alternatives section.

***The runway width of 75 feet meets the RDC B-II-5000 design standard. No change in runway width is planned.***

**Pavement Strength** | Runway 4R-22L is currently strength-rated for up to 30,000 pounds for single wheel loading aircraft (SWL), which is adequate for all small aircraft and most small to mid-sized business jets. The critical design aircraft (Cessna Citation Jet CJ4 and Beechcraft King Air 200/300/350) have maximum takeoff weights (MTOWs) of 30,000 pounds or less. The Cessna Citation X has a MTOW of 36,100 pounds on a dual-wheel main gear configuration, which also can be accommodated by the existing pavement strength on a regular basis. The existing strength rating is adequate for all aircraft operating at CHD currently and in the future. Therefore, ***no plans to strengthen the primary runway are recommended.***

**Instrument Approach Procedures** | Runway 4R has two published one-mile visibility instrument approach procedures. Runway 22L is a visual-only runway. The plan includes maintaining instrument approach capabilities for Runway 4R at a one-mile visibility and coordinating with the FAA on establishing one-mile visibility procedures to Runway 22L. No new on-site equipment is needed to establish a GPS-based approach procedure to Runway 22L, and the size of the associated Runway Protection Zone (RPZ), would not be changed.

**Runway Protection Zones (RPZs)** | The existing one mile or greater visibility minimum RPZs for both ends of the runway encompass 13.77 acres. The RPZs are located on property owned by the airport. If the runway is extended as planned to the northeast, the Runway 22L RPZ will shift in the same direction but will still be located entirely on property owned by the airport. The existing perimeter service road will ultimately pass through the RPZ; however, this is not a public-use road, so it is not considered an incompatible land use.

**Blast Pads** | The blast pads at the ends of the runway are undersized. The plan includes expanding the blast pads to 95 feet wide and 150 feet long to meet design standards.

## PARALLEL RUNWAY 4L-22R

**Runway Designation** | Similar to the primary runway, Runway 4L-22R's current magnetic heading, accounting for magnetic declination, is 039°/219°. Therefore, the existing designation should be maintained.

**Runway Dimensions** | The runway is currently 4,401 feet long and 75 feet wide. These dimensions adequately accommodate the small aircraft this runway is intended to serve. Therefore, ***no modifications to the runway dimensions are currently justified or planned.***

**Pavement Strength** | The runway is currently strength-rated for up to 30,000 pounds for SWL aircraft. This strength rating is more than adequate for the types of aircraft currently using, and planned to use, the runway, which are small aircraft weighing 12,500 pounds or less.

**Instrument Approach Procedures** | Both ends of this runway are visual-only, meaning there are no published instrument approach procedures available. The plan allows for the possibility of establishing GPS-

based approach procedures with one-mile or greater visibility minimums. These types of procedures do not require the installation of on-site equipment and would not alter the dimensions of the RPZs. If instrument approach procedures are established on this runway, markings will need to be improved to non-precision markings by adding threshold markings.

**Runway Protection Zones (RPZs)** | The RPZ dimensions for the parallel runway will remain the same as they are currently, at 8.035 acres. A portion of the Runway 4L RPZ extends beyond property owned by the airport over E Queen Creek Road; however, this property is controlled by an avigation easement. There are no plans to extend the runway or alter its design standards; therefore, E Queen Creek Road can be allowed to remain within the RPZ. The Runway 22R RPZ is located entirely on property owned by the airport without incompatibilities.

**Visual Approach Aids** | The parallel runway is not currently equipped with Runway End Identifier Lights (REILs). The plan includes adding REILs at both ends of the runway to improve pilot situational awareness.

## TAXIWAY IMPROVEMENTS

**Taxiway Design** | The entirety of the CHD taxiway system is planned to meet Taxiway Design Group (TDG) 2 standards. Many of the taxiway intersections on the airfield do not currently meet proper taxiway fillet design standards. Taxiway fillets are tapered pavement sections at intersections that allow aircraft to turn while maintain taxiing speed and obstruction clearance. Additional taxiway fillet pavement to meet design standards are depicted on **Exhibit 5A**.

**Taxiway Nomenclature** | Current taxiway designations do not meet FAA Engineering Brief (EB) 89, *Taxiway Nomenclature Convention* standards. According to the EB, stub taxiways associated with a parallel taxiway should be designated with a letter and number, such as A1, A2, A3, etc., beginning with the northernmost stub for north/south taxiways and starting with the westernmost stub for east/west taxiways. Ultimate taxiway designations that meet the EB standards, along with the additional taxiway extensions/improvements, are identified on **Exhibit 5A**.

**Taxiway A** | Taxiway A, the full-length parallel taxiway supporting parallel Runway 4L-22R, is 40 feet wide, which exceeds the TDG 2 width standard of 35 feet. Improvements planned for Taxiway A and its connectors include removing pavement sections of Taxiway F to eliminate direct-access from the apron to the runway. New connecting Taxiway A2 is planned to replace the portion of Taxiway F that is being removed.

The southwest portion of Taxiway A from Taxiway A1 to A7 is separated from the T-hangar area edge taxilane by 74 feet, which meets only Airplane Design Group (ADG) I separation standards (ADG II standards require separation of 105 feet). As a result, ADG II aircraft should use caution in this area to ensure wingtip clearance is maintained with other aircraft. **Figure 5A** depicts the ADG I limitation area.

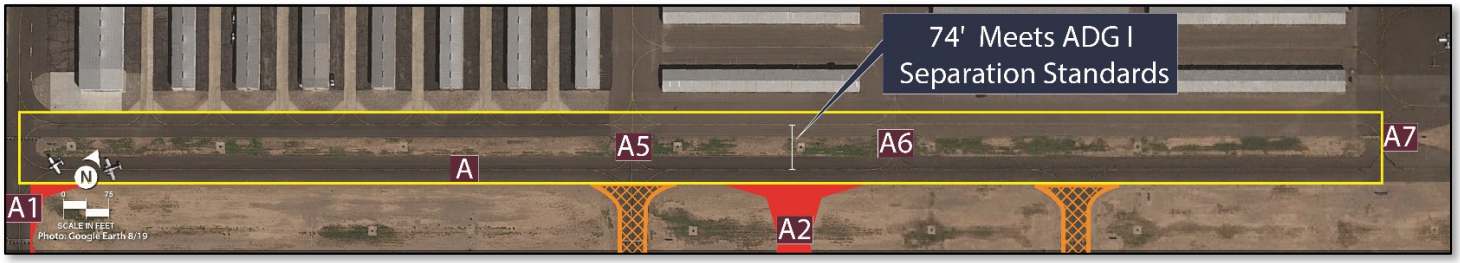



FIGURE 5A – TAXIWAY A ADG I SEPARATION AREA

**Taxiway B** | Taxiway B is located between the two runways and is 40 feet wide. Taxiway B is planned to be extended to the northeast and southwest to coincide with the extension to Runway 4R-22L and to provide for improved airfield circulation. For aircraft taxiing to the Runway 22L end from the north side, there is currently only one access route that does not require multiple runway crossings. The southwest extension of Taxiway B will create a full-length parallel for both runways and multiple routes for aircraft to access the Runway 22L end from the north side without having to cross both runways. The expansion of Taxiway B is also planned in phases to alleviate congestion issues at the Runway 22R threshold that has resulted in Hot Spot #1. All new Taxiway B pavement is planned to be equipped with LED medium intensity taxiway lighting (MITL) and airfield signage.

**Taxiway C** | Taxiway C is the 40-foot-wide south parallel taxiway to the primary runway. This taxiway is planned to be extended to the northeast to coincide with the runway extension. Existing Taxiway N, which is planned to be re-designated as part of the taxiway nomenclature change, is planned to be relocated south of Runway 4R-22L. This section of taxiway pavement will be shifted to the southwest to eliminate a crossing intersection in the high-energy area of the runway. The shifted connector will ultimately be designated Taxiway C3.

**Taxiway Geometry Improvements** | Previous chapters have discussed non-standard taxiway geometry issues at CHD, including where taxiways provide direct access from the apron area to the runway and where taxiways intersect with runways in the high-energy area. Existing direct-access taxiways include: Taxiway F (to the southwest end of Runway 4L), M (to the northeast end of Runway 22R), and Q (to the Runway 22L threshold). The plan includes removing pavement sections on these taxiways to eliminate runway access. Specific changes are described in the bullets below:

- The portion of Taxiway F pavement that connects Taxiway A to Runway 4L-22R will be removed and relocated to the east to become ultimate Taxiway A2.
- Taxiway J is located approximately 475 feet from Taxiway L (ultimate A3). As previously mentioned, taxiway exits should be spaced 750 feet or greater to effect capacity. Since it does not meet this spacing recommendation, it is planned for removal.
- Taxiway M (ultimate A9), between Taxiway A and the runway is planned to be removed to eliminate the direct-access point. The connection from the apron area to Taxiway A will remain. Taxiway M is located less than 750 feet from Taxiway L (ultimate A3) and Taxiway N (ultimate A4). Taxiway exits should be spaced 750 feet or greater to effect capacity. Since it does not meet this spacing recommendation, it is planned for removal.

- Taxiway Q (ultimate C5) between Taxiway C and the heliport apron will be removed. A new connecting taxiway (C10) is planned to be constructed 100 feet west to create a new access point to the heliport apron.

**Holding Bays** | The traditional holding aprons on the airfield are now considered non-standard since the wide expansive pavement area makes signage and lighting more difficult for pilots to see, which can lead to pilot confusion near the entrance to a runway. Therefore, the plan includes eliminating the existing holding aprons and replacing them with taxiway holding bays. Holding bays have clear entrance/exit points and independent parking areas separated by islands. Single-lane holding bays are planned for the west end of Taxiway B at the Runway 4L threshold, and on Taxiway B east of the Runway 22R RPZ. Multi-lane holding bays are planned for the east end of Taxiway A[3] and on the south side of Taxiway B near the runway ends. The holding bays on the south side will encroach upon the existing perimeter service road. The plan includes rerouting the perimeter service road in these areas so that it does not pass through the taxiway object free area (TOFA). Each holding bay is designed to accommodate ADG II aircraft.

## *LANDSIDE CONCEPT*

The primary goal of landside facility planning is to provide adequate space to meet reasonably anticipated general aviation needs, while also optimizing operational efficiency and land use. Achieving these goals yields a development scheme that segregates functional uses while maximizing the airport's revenue potential. The CHD landside concept reflects generalized land use areas as opposed to specific facility/hangar layouts, which are likely to change depending on the needs of the developer and its target customers.

The key issues to be addressed in the landside areas at CHD are typical of most general aviation airports and include providing an expanded terminal services facility, increasing hangar and apron capacities, expanding Jet A fuel storage capacity, and adding amenities to accommodate existing users and attract new users.

***As a reminder, all general aviation-related development, such as new hangar construction, should occur only as dictated by demand. The recommended concept is intended to be used strictly as a guide for CHD staff when considering new developments.***

***Sections below describe reserving portions of airport property for non-aviation uses. Generally, airport property is subject to Airport Improvement Program (AIP) grant assurances; therefore, CHD will need to request a release of these properties of federal obligations by the FAA. Once a release of federal obligation is issued by the FAA, CHD would be able to lease or sell these certain properties to support revenue diversification and generation. The FAA Reauthorization Act of 2018, Section 163 changed how the FAA's Office of Airport's staff reviews and considers the release of airport property for non-aviation uses. The section focuses FAA's review and approval of Airport Layout Plans (ALPs) to those portions of the ALP that materially impact the safe and efficient operation of airports; the safety of people and property on the ground adjacent to the airport; and the value of prior Federal investments to a significant extent. In effect, this new guidance is intended to ease the process of gaining FAA approval of land releases.***

3 This site is an existing Declaration of Environmental Use Restriction (DEUR) site that has already been paved. This project repurposes that pavement as a holding bay.

## NORTH SIDE

The north side concept is depicted in **Figure 5B**. Features of the north side concept are described below.

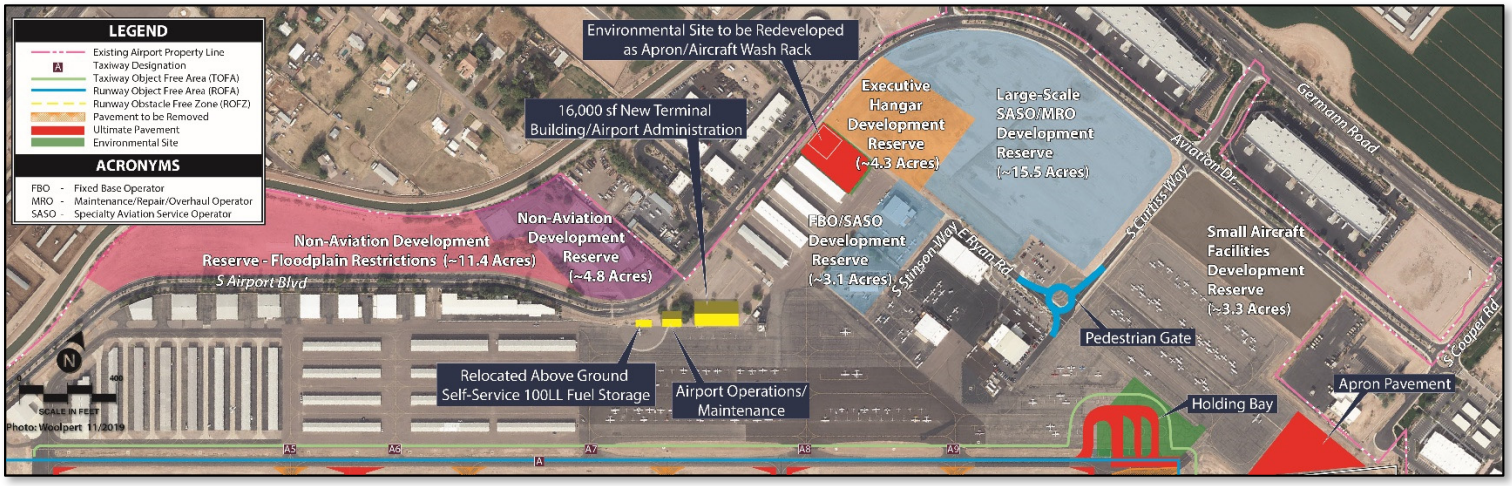



FIGURE 5B – NORTH LANDSIDE DEVELOPMENT CONCEPT

**Terminal Building** | The alternatives analysis considered several options for development of the north and south sides of the airfield. Of most importance was the location for a new terminal building that would provide a larger and more modern facility for pilot and passenger amenities, as well as offices for airport administration. As the focal point for landside facilities, the location of the terminal building influences surrounding development that would cater to transient operators, such as fixed base operators (FBOs) and specialized aviation service operators (SASOs). Consideration was given to locating the terminal building on the south side of the airfield adjacent to the primary runway, which is capable of accommodating larger aircraft; it was ultimately determined, however, that south-side development is not likely to occur for several years, and the additional supporting FBO/SASO activity has already been established on the north side. Therefore, a new 16,000 square foot (sf) terminal facility is planned to be developed on the north side adjacent to the existing airport traffic control tower (ATCT). This site has frontage to the terminal apron that makes it highly visible from the airfield and takes advantage of an existing vehicle parking lot that is currently underutilized. Utility infrastructure is also already in place in this site to accommodate a new terminal building.

**Airport Operations/Maintenance** | Airport maintenance equipment is currently housed in a hangar on the old heliport site north of S. Airport Boulevard. It is the desire of airport management to relocate maintenance facilities near the new terminal building to provide a consolidated airport administrative complex. Being located adjacent to the new terminal would also eliminate the need for operations and maintenance personnel to cross a public road and improve responsiveness to airfield issues. The planned operations/maintenance facility is located immediately west of the new terminal building along the terminal apron.

**Fuel Storage** | The bulk of fuel storage capacity at CHD is provided by the airport's FBO; however, the City of Chandler has a 12,000-gallon 100LL underground storage tank located adjacent to the existing maintenance/operations facility along S. Airport Boulevard. The self-service distribution system for this tank is

located south of S. Airport Boulevard on the terminal apron. Underground storage tanks are susceptible to leaking, which can create environmental hazards, so it is preferred to replace the underground tank with an above ground tank that is equipped with spill containment. The plan includes eliminating the existing underground tank and replacing it with an above ground fuel storage tank on the terminal apron adjacent to the existing self-service fuel distribution system.

**Apron Expansion** | There is currently approximately 235,854 square yards (sy) of apron pavement at CHD. Additional apron capacity is needed over the course of the next 20 years to accommodate growth in based aircraft, as well as spaces for transient operators. Much of the flight line on the north side has already been developed with apron pavement or for hangars. The plan includes adding approximately 4,700 sy of new pavement on an environmental site north of the existing terminal building adjacent to Hangar AG. The 1-acre environmental site was previously used as a dump site for construction debris sometime between 1949 and 1964. The City of Chandler has determined this site can be capped with asphalt and returned to useable airport property. This new apron space provides new aircraft parking spaces and a site for a potential future aircraft wash rack. The taxilane access to this site allows for up to ADG II aircraft.

**FBO/SASO Development** | CHD's current FBOs and SASOs are all located on the north side of the airfield. The plan includes reserving vacant space and redeveloping the existing terminal area for new or expanded FBO/SASO facilities and activities. The existing terminal facility and parking lot, along with an adjacent conventional hangar that is currently vacant, makes up an approximately 3.1-acre redevelopment site that could be developed with larger (10,000+ sf) conventional hangars and apron space. The proximity to the new terminal site would also make this site convenient for servicing transient operators. An additional 15.5 acres of undeveloped property along Aviation Drive has been reserved for a large-scale SASO or maintenance/repair/overhaul (MRO) operations. This parcel size provides for a future developer to construct any type of facility needed for a major operation, including an aircraft manufacturer.

**Executive Hangar Development** | Executive hangars are typically conventional-style hangars that provide storage capacities larger than a typical T-hangar, up to 10,000 sf. This style of hangar can accommodate a single large aircraft or multiple small aircraft. The plan reserves approximately 4.3 acres for executive hangar development, including associated taxilanes and vehicle access roads, north of the terminal on undeveloped property along Aviation Drive.

**Small Aircraft Facilities Development** | Small aircraft makeup the bulk of the based aircraft and operations at CHD. The type of facilities that cater to small aircraft are T-hangars, shaded parking structures, and uncovered parking aprons. The plan reserves approximately 3.3 acres north of the north apron along Aviation Drive for the development of new small aircraft facilities.

**Non-Aviation Development** | The airport owns approximately 16.2 acres of property between S. Airport Boulevard and the drainage canal north of the airport. This property was previously used as the airport's heliport, but since helicopter operations were relocated to the south side of the airport the site has been used for the storage of airport maintenance equipment. Because this site is not accessible to the airfield, it cannot be developed for aviation-related uses. For this reason, the plan reserves this area for non-aviation development to include compatible commercial or industrial developments. Approximately 11.4 acres of this site is within a floodplain and would include development restrictions.

**Vehicle Access** | The intersection of S. Curtis Way and E. Ryan Road is planned for a roundabout. It is desired for the airport's roadway network to be consistent with the surrounding Chandler Airpark, which features several roundabouts. A secured pedestrian access gate is also planned at the apron area to provide access to the apron area.

### SOUTH SIDE

Planned south side development areas are depicted in **Figure 5C**.

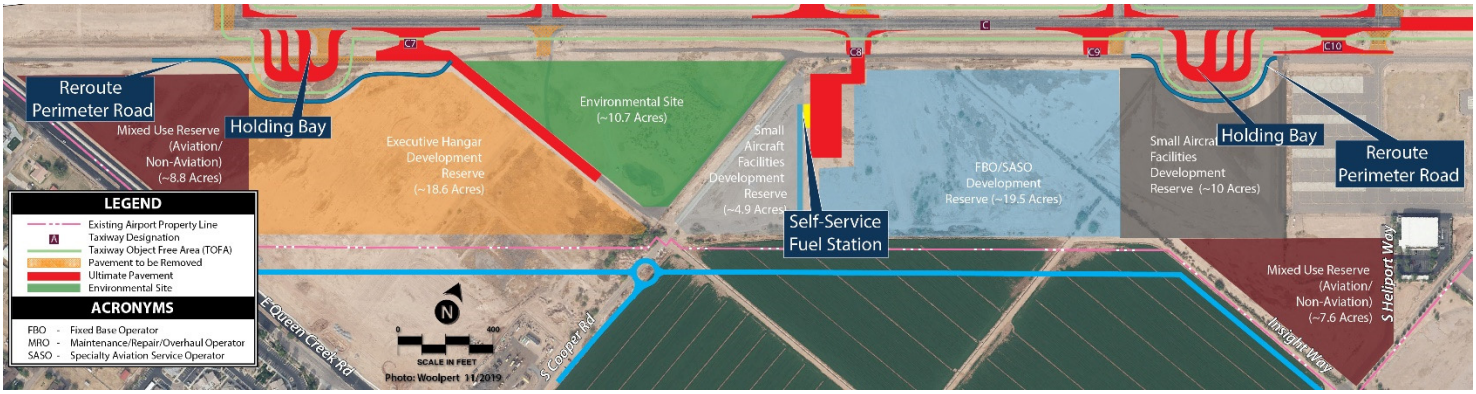



FIGURE 5C – SOUTH LANDSIDE DEVELOPMENT CONCEPT

The south side of the airport is predominantly undeveloped with approximately 82 acres (excluding 10.7 acres of an environmental site) available for development. Helicopter operations associated with Quantum Helicopters are the primary activity on the south side. It is anticipated that once the north side reaches a built-out condition, new development will begin on the south side. A major barrier to development of the south side is a need for expanded utility infrastructure and vehicle access roads. The plan also identifies extensions of Insight Way and S Cooper Road into the south side of the airport for vehicle circulation. Once this infrastructure is in place, the plan reserves parcels for new FBO/SASO development (19.5 acres); executive hangars (27.4 acres); and small aircraft facilities (24.4 acres). A dedicated fuel storage facility will also be necessary on the south side to eliminate the need for fuel trucks to travel from the north to fuel aircraft.

## *AIRPORT RECYCLING, REUSE, AND WASTE REDUCTION*

### REGULATORY GUIDELINES

#### FAA Modernization and Reform Act of 2012

The *FAA Modernization and Reform Act of 2012* (FMRA), which amended Title 49, United States Code (USC), included several changes to the Airport Improvement Program (AIP). Two of these changes are related to recycling, reuse, and waste reduction at airports.

- Section 132(b) of the FMRA expanded the definition of airport planning to include "developing a plan for recycling and minimizing the generation of airport solid waste, consistent with applicable State and local recycling laws, including the cost of a waste audit."

- Section 133 of the FMRA added a provision requiring airports that have or plan to prepare a master plan, and that receive AIP funding for an eligible project, to ensure that the new or updated master plan addresses issues relating to solid waste recycling at the airport, including:
    - The feasibility of solid waste recycling at the airport;
    - Minimizing the generation of solid waste at the airport;
    - Operation and maintenance requirements;
    - A review of waste management contracts; and
    - The potential for cost savings or the generation of revenue.

### State of Arizona Solid Waste Management Plan

The *Arizona Solid Waste Management Plan* (1981)[4] was adopted to promote environmentally sound waste management. General goals of the waste management plan include:

- Promote improved and environmentally sound methods of solid waste management and disposal;
- Promote recovery and reuse of valuable material and energy resources from solid waste;
- Provide policy and procedural guidance to state, substate, and local agencies in the proper management of solid waste; and
- Fulfill requirements of *Resource Conservation and Recovery Act* (RCRA) and secure the state's continued eligibility for federal financial assistance.

Currently, there is no state law or regulation addressing solid waste management reduction thresholds. However, other means such as education, outreach, voluntary recycling, and non-profit organizations have been employed to reduce the quantity of solid waste in Arizona.

## SOLID WASTE

Typically, airport sponsors have purview over waste handling services in facilities it owns and operates, such as the terminal building, city-owned hangars, and maintenance facilities. Tenants of airport-owned buildings/hangars, or tenants that own their own facilities, are typically responsible for coordinating their own waste handling services. While the focus of this plan is airport-operated facilities, the airport should work to incorporate facility-wide strategies that create consistency in waste disposal mechanisms. This would ultimately result in the reduction of materials sent to the landfill.

4 Arizona Department of Environmental Quality *Arizona Solid Waste Management Plan* (March 1981) (https://legacy.azdeq.gov/environ/waste/solid/)

For airports, waste can generally be divided into eight categories:[5]

- **Municipal Solid Waste** (MSW) is more commonly known as trash or garbage consisting of every-day items that are used and then discarded, i.e. product packaging.
- **Construction and Demolition Waste** (C&D) is considered non-hazardous trash resulting from land clearing, excavation, demolition, renovation or repair of structures, roads and utilities, including concrete, wood, metals, drywall, carpet, plastic, pipe, cardboard, and salvaged building components. C&D is also generally labeled as MSW.
- **Green Waste** is a form of MSW yard waste consisting of tree, shrub and grass clippings, leaves, weeds, small branches, seeds, and pods.
- **Food Waste** includes unconsumed food products or waste generated and discarded during food preparation and is also considered MSW.
- **Deplaned Waste** is waste removed from passenger aircrafts. Deplaned waste includes bottles, cans, mixed paper (newspapers, napkins, paper towels), plastic cups, service ware, food waste, and food soiled paper/packaging.
- **Lavatory Waste** is a special waste that is emptied through a hose and pumped into a lavatory service vehicle. The waste is then transported to a triturator[6] facility for pretreatment prior to discharge in the sanitary sewage system. Due to the chemicals in lavatory waste, it can present environmental and human health risks if mishandled. Caution must be taken to ensure lavatory waste is not released to the public sanitary sewerage system prior to pretreatment.
- **Spill Clean and Remediation Wastes** are also special wastes and are generated during cleanup of spills and/or the remediation of contamination from several types of sites on an airport.
- **Hazardous Wastes** are governed by RCRA, as well as the regulations in 40 Code of Federal Regulations (CFR) Subtitle C, Parts 260 to 270. The U.S. Environmental Protection Agency (EPA) developed less stringent regulations for certain hazardous waste, known as universal waste, described in 40 CFR Part 237, *The Universal Waste Rule*.

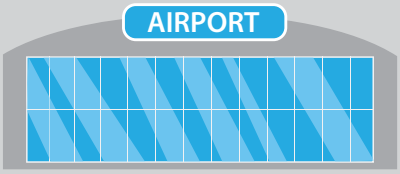
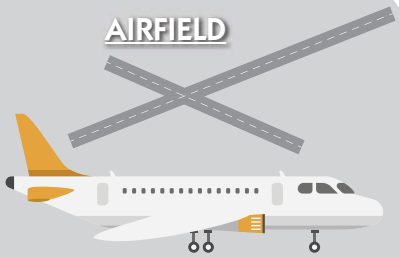
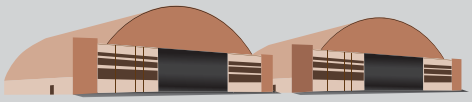
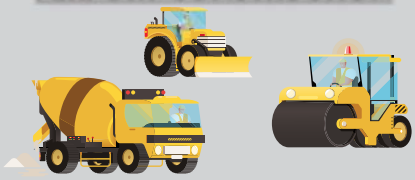
As seen on **Exhibit 5B**, there are multiple areas where CHD potentially contributes to the waste stream, including the terminal and pilot's lounge, airfield, hangars, airport construction projects, and airport traffic control tower. To create a comprehensive waste reduction and recycling plan for the airport, all potential inputs must be considered.

## EXISTING SERVICES

Currently, waste management services for the airport are managed by the City of Chandler through a franchise agreement with Republic Services. Three MSW dumpsters are located airside adjacent to the municipal hangars, one dumpster is located landside adjacent to the terminal, and one more is by the airport maintenance equipment storage facility. No information is available regarding the weight of

5 Recycling, Reuse and Waste Reduction at Airports, FAA (April 24, 2013)
6 A triturator facility turns lavatory waste into fine particulates for further processing.

# AIRPORT WASTE STREAMS for CHANDLER MUNICIPAL AIRPORT

| AIRPORT AREA | POTENTIAL INPUTS | POTENTIAL OUTPUTS |
|---|---|---|
| TERMINAL/PILOT'S LOUNGE   | Employees<br>Pilots | Food Waste<br>Paper, Plastic<br>Aluminum Cans<br>Trash, Cardboard |
| AIRFIELD  | Aircraft<br>Operations | Runway Rubber<br>Green Waste |
| HANGARS  | Goods<br>Movements | Plastic<br>Wood<br>Vehicle Waste<br>(Tires & Fluids) |
| AIRPORT TRAFFIC CONTROL TOWER  | Employees | Paper,<br>Trash,<br>Aluminum Cans |
| AIRPORT CONSTRUCTION  | Construction<br>Re-Construction<br>Demolition | Reused Concrete<br>Reused Asphalt<br>Vehicle Waste<br>Soils, Building Materials<br>Wood, General Waste |

***Source:*** Recycling, Reuse, and Waste Reduction at Airports, FAA (April 24, 2013)

MSW hauled or the cost of service. Dumpsters are emptied weekly on Fridays. Currently, there is not a designated individual or department onsite at the airport to oversee waste management for the facility.

The airport engages in recycling services, also provided by Republic Services. The airport provides small recycling containers inside the terminal lobby, flight planning room, and within individual airport administration offices. Recyclables are collected weekly, and the most common recycled materials at the airport include paper, corrugated cardboard, glass, and aluminum cans. All materials accepted for recycling by Republic Services are depicted on **Exhibit 5C**.[7]

## SOLID WASTE MANAGEMENT SYSTEM

Airports generally utilize either a *centralized* or a *decentralized* waste management system. The differences between these two methods are described below and summarized in **Exhibit 5D**.

- **Centralized waste management system.** With a centralized waste management system, the airport provides receptables for the collection of waste, recyclables, or compostable materials and contracts for the removal by a single local provider.[8] The centralized waste management system allows for more participation from airport tenants who may not be incentivized to recycle on their own and can reduce the overall cost of service for all involved. A centralized strategy can be inefficient for some airports as it requires more effort and oversight on the part of airport management. However, the centralized system is advantageous in that is has less players involved in the overall management of the solid waste and recycling efforts, and allows greater control by the city over the type, placement, and maintenance of dumpsters, thereby saving space and eliminating the need for each tenant to have their own containers.

- **Decentralized waste management system.** Under a decentralized waste management system, the airport provides waste containers and contracts for the hauling of waste materials in airport-operated spaces only. Airport tenants, such as fixed-base operators, retail shops, and other tenants manage the waste from their leased spaces with separate contracts, billing, and hauling schedules. A decentralized waste management system can increase both the number of receptacles on airport property and the number of trips by a waste collection service provider, should the collection schedule for the tenant differ from the airport.

Currently, the airport participates in a decentralized waste management system since airport tenants are responsible to oversee their waste management. Airport tenants include fixed based operators, specialty aviation service operators, the Hangar Café, and privately owned hangars. Airport staff should actively engage tenants to create a centralized waste management system at the airport to streamline waste management and recycling efforts at CHD.

7 Republic Services (https://www.republicservices.com/)
8 *Airport Waste Management and Recycling Practices* (2018) The National Academies of Sciences, Engineering, and Medicine Airport Cooperative Research Program, Synthesis 92.

# Recycle Right

talogs direct mail coupons STATIONERY notebooks
shredded paper phone books paperback books
COLA BOTTLES detergent bottles yogurt containers
ION VIALS picnic cups milk jugs GLASS wine bottles

## ALLOWABLE RECYCLABLES

### PAPER

- Newspaper
- Phone books
- Envelopes
- Junk mail
- Brochures
- Magazines

### ALUMINUM/METAL RECYLCING

- Aluminum beverage cans
- Food cans
- Scrap metal

### CARDBOARD RECYCLING

- Ream wrappers
- File folders
- Poster board
- Frozen food boxes
- Cardboard boxes
- Milk Cartons

### PLASTIC RECYCLING

- Water bottles
- Take-out containers
- Soda bottles

### GLASS RECYCLING

**Varies by location**

- Beverage containers
- Glass food jars

## OTHER ITEMS

### ITEMS REQUIRING SPECIAL HANDLING

**These items should never be mixed with regular recycling. Disposal requires special handling.**

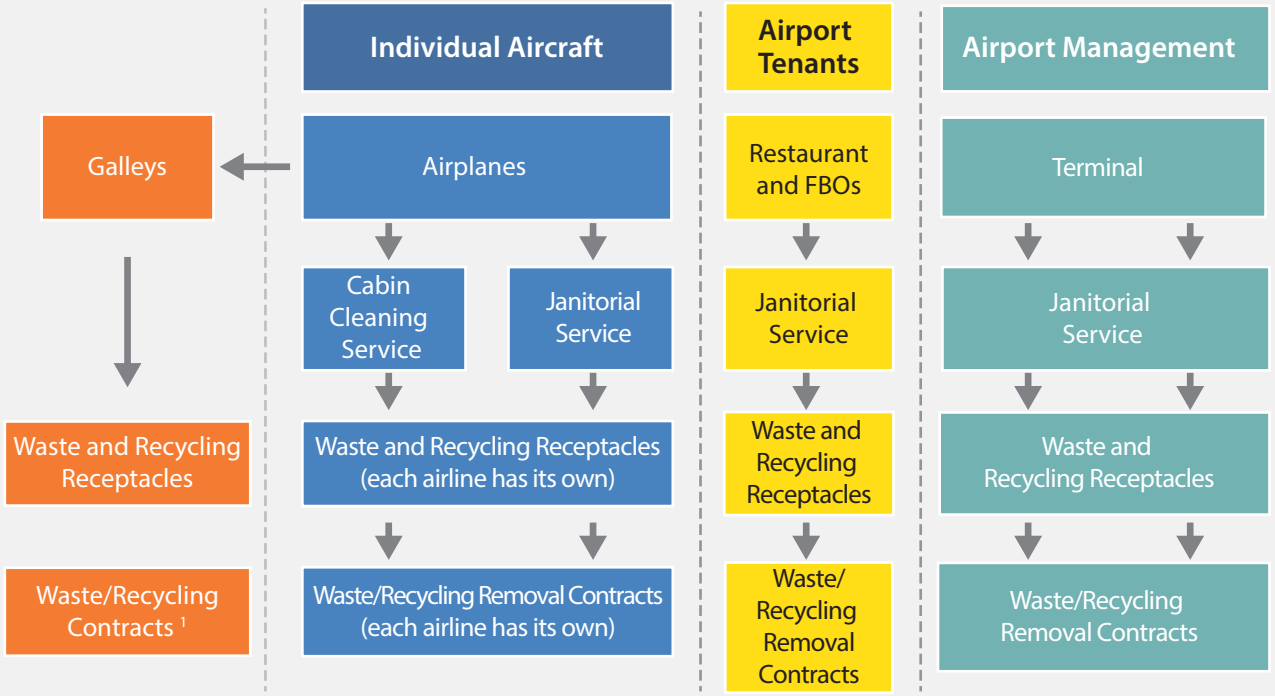
- Incandescent light bulbs
- Fluorescent tubes
- Computers & Electronics
- Needles or syringes
- Hazardous waste
- Toxic material containers
- Paint
- Yard waste (Green Waste)

### NON-RECYCLABLE ITEMS

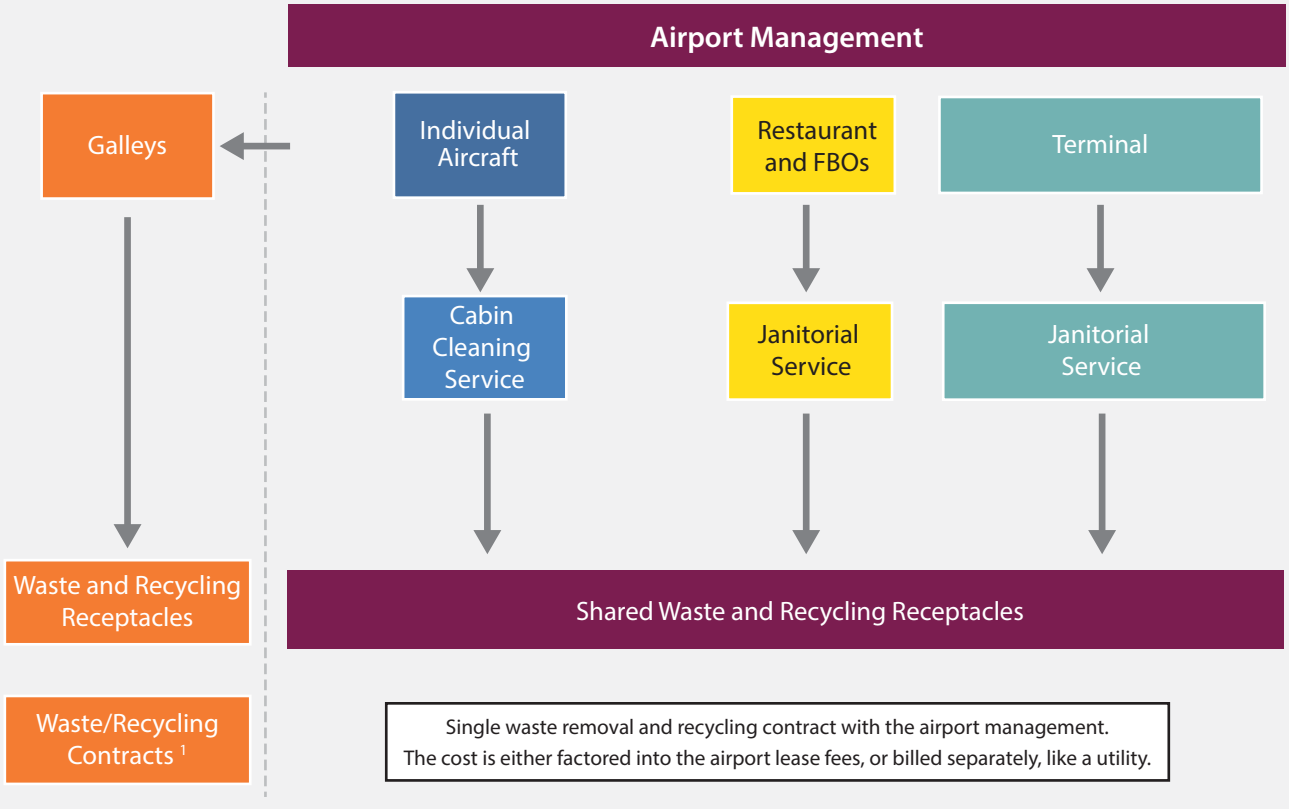
- Aerosol cans
- Aluminum foil
- Batteries
- Clothing
- Food waste
- Napkins
- Mirrors
- Ceramic
- Plastic bags
- Shredded paper
- Stickers/Address labels
- Tissue
- Styrofoam
- Paper towels
- Glass windows
- Pyrex

**Source:** Republic Services (2020)

## Components of a Decentralized Airport Waste Management System




## Components of a Centralized Airport Waste Management System




[1] Galleys typically manage their own waste even if an airport relies on a centralized system

***Source:*** Natural Resources Defense Council, Trash Landings: How Airlines and Airports Can Clean Up Their Recycling Programs, December 2006.

## GOALS AND RECOMMENDATIONS

### Solid Waste and Recycling Goals

While the airport may or may not expand the existing waste management system with additional landside recycle dumpsters in other locations at the airport, there are other opportunities for improvement. **Table 5B** outlines objectives that could help reduce waste generation and increase recycling efforts at the airport. To increase the effectiveness of tracking progress at the airport, a baseline state of all suggested metrics should be established to provide a comparison over time.

**TABLE 5B**
**Waste Management and Recycling Goals**
**Chandler Municipal Airport**

| Goals | Objectives |
|---|---|
| Reduce amount of solid waste generated | Switch to online bill pay to eliminate monthly paper bills |
| | Conduct a waste audit to identify most common types of waste |
| | Eliminate purchase of items that are not recyclable (i.e. Styrofoam, plastic bags) |
| Reuse of materials or equipment | Reuse grass clippings as mulch |
| | Offer reusable dishes to employees |
| | Recycle cardboard boxes for storage |
| Increase amount of materials recycled | Promote the expansion of recycling services to all areas of the airport |
| | Improve waste and recycling tracking and data management |
| | Incorporate recycling requirements and/or recommendations into tenant lease agreements |
| | Expand recycling marketing and promotion efforts throughout public areas |
| | Require contractors to implement strategies to reduce, reuse & recycle construction & demolition waste |

*Source: Coffman Associates, Inc.*

### Recommendations

To maximize waste reduction and increase recycling efforts at the airport, the following recommendations are made:

- **Assign the responsibility of waste management to a dedicated individual(s).** Having one person or a group of people oversee and manage solid waste and recycling at the airport will create efficient and cost saving solutions to solid waste management. People dedicated to this operational aspect of the airport will have a familiarity of processes and will help identify areas of improvement and cost-cutting measures.

- **Audit the current waste management system.** The continuation of an effective program requires accurate data of current waste and recycling rates. There are several ways an airport can gain insight into their waste stream, such as requesting weights from the hauler, tracking the volume, or reviewing the bills. But managing the waste system first starts with a waste audit. A waste audit is an analysis of the types of waste produced and is the most comprehensive and intensive way to assess waste stream composition, opportunities for waste reduction, and capture of recyclables. A waste audit should include the following actions:

- Examination of records
  - Waste hauling and disposal records and contracts
  - Supply and equipment invoices
  - Other waste management costs (commodity rebates, container costs, etc.)
  - Track waste from the point of origin
  - Establishes a baseline for metrics

- Facility walk-through conducted by the airport
  - Qualitative waste information to determine major waste components and waste-generating processes
  - Identify the locations of the airport that generate waste
  - Identify what type of waste is generated by the airport to determine what can be reduced, reused, or recycled
  - Understanding waste pickup and hauling practices

- Waste sort
  - Provides quantitative data on total airport waste generation
  - Allows problem solving design/enhancing the recycling program for the airport

- **Create a tracking and reporting system.** Continuing to track the solid waste that is generated will allow the airport to identify areas where a significant amount of waste is generated and will help the airport estimate annual waste volumes. Understanding the cyclical nature of waste generation will allow the airport to estimate costs and identify areas of improvement. Since the airport engages in recycling services, the airport can track recycling rates and waste quantities to identify cost saving measures that are currently unidentified simply based on the lack of quantitative data.

- **Reduce waste through controlled purchasing practices.** The airport can control the amount of waste generated by prioritizing the purchase of items or supplies that are reusable, recyclable, compostable, or made from recycled materials.

- **Enhance the existing recycling program at the airport.** To guarantee the airport continues to reduce the amount of waste hauled to the landfill, materials that cannot be reused or avoided should be recycled, if possible. The city should review internal procedures to ensure there are no unacceptable items contaminating recycling containers, or recyclables thrown in the trash. Clearly marked signage of what is and is not accepted placed near the solid waste and recycling containers is another significant component of a consistent, effective recycling program. CHD should actively work with Republic Services to ensure waste and recycling containers are right sized to the existing operation, as well as be on a collection schedule that picks up only when the containers are full.

- **Provide ongoing tenant education.** It is crucial to encourage tenant participation to assure buy-in of the airport's recycling efforts. To ensure recycling is part of the airport's everyday business, airport administration can provide training and educational to support personnel, tenants, and others who conduct business at the airport. In-person meetings with airport tenants could be held to create mutual understanding of the airport's solid waste and recycling goals, and how tenants play a vital role in the airport's overall success.

- **Create a centralized waste management system at the airport.** The airport should actively engage tenants to create a centralized waste management system at the airport to streamline waste management and recycling efforts at CHD.

- **Incorporate an airport-wide waste reduction strategic plan.** Designing an airport-wide waste reduction strategic plan will create consistency in waste deposal mechanisms, ultimately resulting in the reduction of materials sent to the landfill.

## *ENVIRONMENTAL OVERVIEW*

An analysis of potential environmental impacts associated with proposed airport projects is an essential consideration in the master plan process. The primary purpose of this discussion is to review the recommended airport development concept plan and associated capital program at the airport to determine whether projects identified in the master plan could, individually or collectively, significantly impact existing environmental resources. The information contained in this section was obtained from previous studies, official internet websites, and analysis by the consultant.

Construction of any and all improvements depicted on the recommended airport development concept plan will require compliance with the *National Environmental Policy Act* (NEPA) *of 1969*, as amended. This includes privately funded projects and those projects receiving federal funding. For projects not categorically excluded under FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, compliance with NEPA is generally satisfied through the preparation of an Environmental Assessment (EA). In instances where significant environmental impacts are expected, as determined by the FAA, an Environmental Impact Statement (EIS) may be required. While this portion of the master plan is not designed to satisfy the NEPA requirements, it provides a preliminary review of environmental issues that may need to be considered in more detail within the environmental review processes. It is important to note that the FAA is ultimately responsible for determining the level of environmental documentation required for airport actions.

The environmental inventory included in Chapter One provides baseline information about the airport environs. This section provides an overview of potential impacts to existing resources that could result from implementation of the planned improvements outlined in the recommended airport development concept plan.

### POTENTIAL ENVIRONMENTAL CONCERNS

**Table 5C** summarizes potential environmental concerns associated with implementation of the recommended master plan development concept for CHD. Analysis under NEPA includes direct, indirect, and cumulative impacts. Direct impacts are caused by the action and occur at the same time and place (see 40 Code of Federal Regulations [CFR] § 1508.8(a)). Examples of direct impacts include:

- Construction of a facility or runway in a wetland which results in the loss of a portion of the wetland; or
- Construction of a facility that adversely affects the visual character of a neighborhood.

Indirect impacts are those impacts caused by the action but are later in time or farther removed in distance but are still reasonably foreseeable (see 40 CFR § 1508.8(b)). Indirect impacts may include growth-inducing impacts and other effects related to induced changes in the pattern of land use, population density or growth rate, and related impacts on air and water and other natural systems, including ecosystems (see 40 CFR § 1508.8(b)).

Cumulative impacts are those that take into consideration the environmental impact of past, present, and future actions. Cumulative impacts will vary based on the project type, geographic location, potential to impact resources, and other factors, such as the current condition of potentially affected impact categories.

**TABLE 5C**
**Summary of Potential Environmental Concerns**
**Chandler Municipal Airport**

| FAA ORDER 1050.1F SIGNIFICANCE THRESHOLD/FACTORS TO CONSIDER | POTENTIAL CONCERN |
|---|---|
| **AIR QUALITY** | |
| **Threshold: The action would cause pollutant concentrations to exceed one or more of the National Ambient Air Quality Standards (NAAQS), as established by the United States (U.S.) Environmental Protection Agency (EPA) under the *Clean Air Act*, for any of the time periods analyzed, or to increase the frequency or severity of any such existing violations.** | **Potential Impact.** The projected increase in operations over the 20-year planning horizon of the recommended airport development concept plan (**Exhibit 5A**) will likely result in additional emissions. Maricopa County is currently designated as a nonattainment area for ozone ($O_3$) and coarse particulate matter ($PM_{10}$). Maricopa County was previously a nonattainment area for carbon monoxide (CO); however, was designated as a maintenance area in 2005. Prior to the start of airport construction activities outlined on the recommended airport development concept plan, an air quality analysis during the NEPA process to determine whether $O_3$, $PM_{10}$, and CO emissions exceed *de minimis* thresholds established by the NAAQS may be required.<br><br>Prior to the start of construction activities, the contractor will be required to obtain a dust control permit from the Maricopa County Air Quality Department. Condition of permit approval will require best management practices (BMPs) to control construction-related fugitive dust relating to construction equipment and earth moving activities, the primary source of $PM_{10}$. |
| **BIOLOGICAL RESOURCES** | |
| **Threshold: The U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS) determines that the action would be likely to jeopardize the continued existence of a federally listed threatened or endangered species or would result in the destruction or adverse modification of federally designated critical habitat.**<br><br>FAA has not established a significance threshold for non-listed species. However, factors to consider are if an action would have the potential for:<br>• Long term or permanent loss of unlisted plant or wildlife species;<br>• Adverse impacts to special status species or their habitats; | <u>For federally listed species</u><br>**No Impact.** The USFWS Information for Planning and Consultation (IPaC) report identified three threatened or endangered avian species: California least tern (endangered), the yellow-billed cuckoo (threatened), and the Yuma clapper rail (endangered) that should be considered when evaluating development in the area.<br><br>As noted in Chapter One, these avian species prefer coastal or riparian nesting habitat. The airport is free from these habitat types and are unlikely to nest at the airport.<br><br><u>Designed Critical Habitat</u><br>**No Impact.** Critical habitat has not been identified within the vicinity of the airport. |

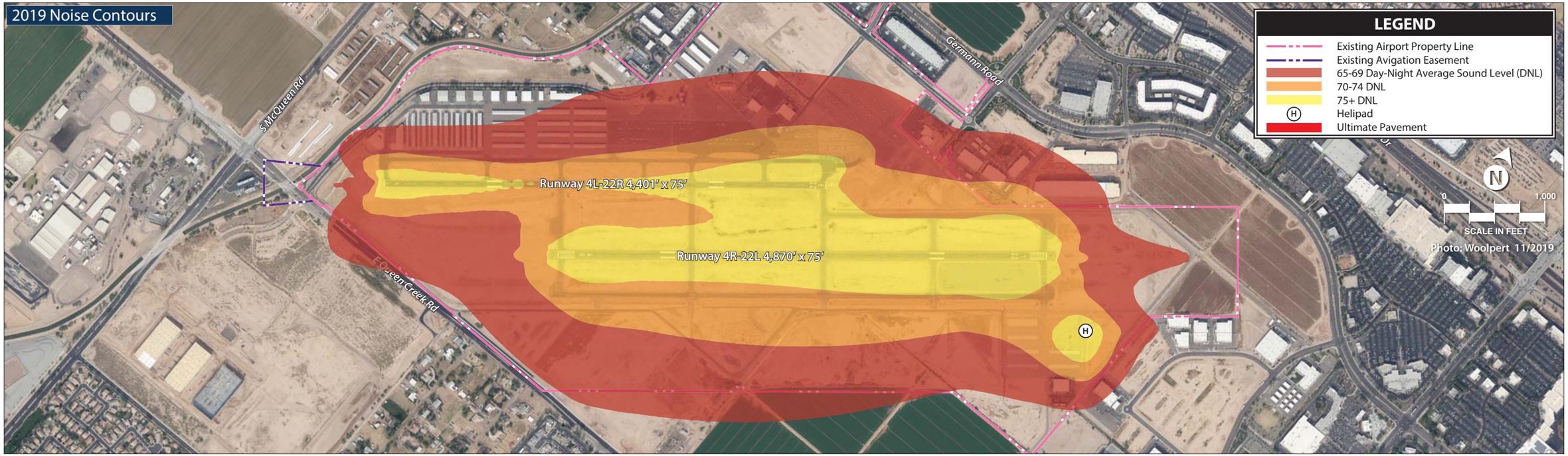
| | |
|---|---|
| • Substantial loss, reduction, degradation, disturbance, or fragmentation of native species' habitats or their populations; or<br>• Adverse impacts on a species' reproductive rates, non-natural mortality, or ability to sustain the minimum population levels required for population maintenance. | Non-Listed Species<br>**Potential Impact.** Non-listed species of concern include those protected by the MBTA and the BGEPA. There are presently five non-listed species of concern that could be impacted by activities at the airport. Habitat to support breeding for this species may be near the airport, therefore, the potential for impacts to migratory birds should be evaluated on a project-specific basis. To ensure that nest sites for the birds listed on the MBTA or BGEPA are not present at the start of airport activities, pre-construction nesting surveys may be required prior to the implementation of projects outlined in the master plan. |
| **CLIMATE** | |
| FAA has not established a significance threshold for Climate; refer to FAA Order 1050.1F's, *Desk Reference*, for the most up-to-date methodology for examining impacts associated with climate change. | **Potential Impact.** An increase in greenhouse gas (GHG) emissions could occur over the 20-year planning horizon of the recommended airport development concept plan. A project-specific analysis may be required per the FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, based on the parameters of the individual projects. |
| **COASTAL RESOURCES** | |
| FAA has not established a significant threshold for Coastal Resources. | **No Impact.** The airport is not located within a coastal zone. |
| ***DEPARTMENT OF TRANSPORTATION ACT*, SECTION 4(F)** | |
| **Threshold: The action involves more than a minimal physical use of a Section 4(f) resource or constitutes a "constructive use" based on an FAA determination that the aviation project would substantially impair the Section 4(f) resource. Resources that are protected by Section 4(f) are publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance; and publicly or privately owned land from an historic site of national, state, or local significance. Substantial impairment occurs when the activities, features, or attributes of the resource that contribute to its significance or enjoyment are substantially diminished.** | **Potential Impact.** Initial assessments should be made to determine whether physical (temporary or permanent) or constructive use of this Section 4(f) resource applies.<br><br>The Chandler Paseo Trail is located along the western boundary of the airport. Proposed non-aviation development along the southwestern boundary of the airport, will be adjacent to the trail, and could potentially affect this resource. Coordination with the City of Chandler may be needed to determine any necessary temporary closures to the trail or avoidance measures as needed, which could result in a temporary constructive use during construction activities.<br><br>The Railroad Steam Wrecking Crane and Tool Car, which is listed on the National Register of Historic Places list and is a protected resource under Section 4(f), is located approximately one mile from the airport. If necessary, the FAA will consider several types of impacts to historical properties. The Section 4(f) compliance process involves the preparation of a Section 4(f) statement by the airport, which evaluates other feasible alternatives.<br><br>Planned airport projects present potential constructive use of other Section 4(f) properties identified in Chapter One in Table 1N. The proposed expansion to Runway 4R-22L outlined in the recommended airport development concept plan can affect Tumbleweed Park or Reflections Park (both located northeast of the airport) as the protected runway area and an altered air traffic pattern may result from runway improvements.<br><br>The responsible FAA official will be required to consult with all appropriate Federal, state, and local officials having |

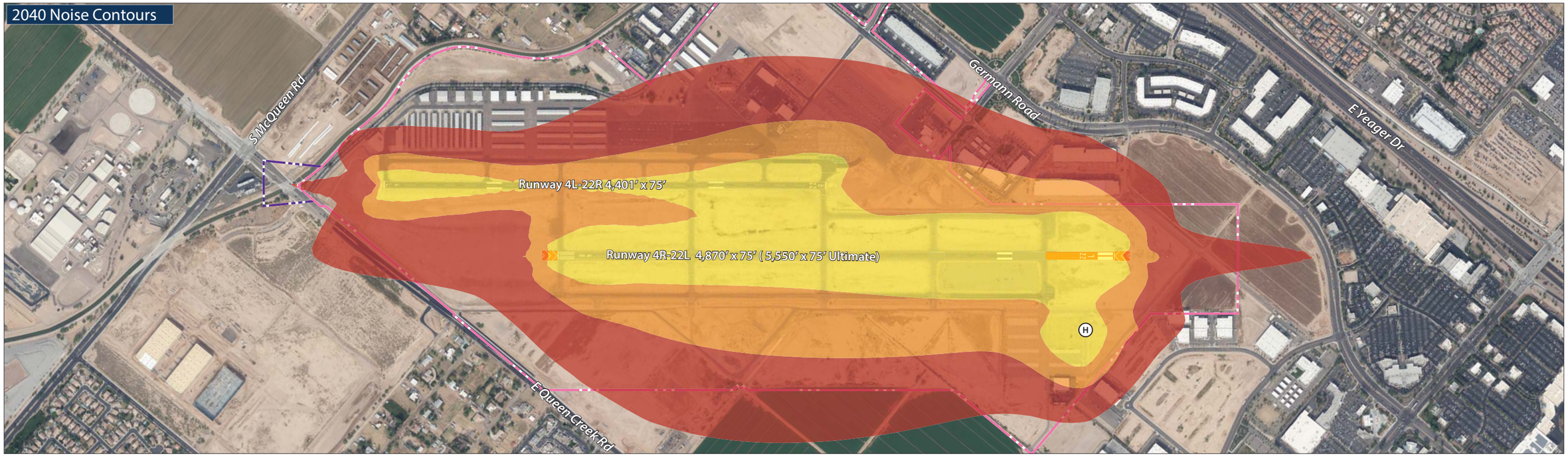
| | |
|---|---|
| | jurisdiction over the affected Section 4(f) properties to determine whether project-related impacts will substantially impair the resource. Consultation will occur as part of the NEPA process as specific projects are initiated. |
| **FARMLANDS** | |
| **Threshold: The total combined score on Form AD-1006, *Farmland Conversion Impact Rating*," ranges between 200 and 260.** (Form AD-1006 is used by the U.S. Department of Agriculture, Natural Resources Conservation Service [NRCS] to assess impacts under the *Farmland Protection Policy Act* [FPPA].)<br><br>FPPA applies when airport activities meet the following conditions:<br>• Federal funds are involved;<br>• The action involves the potential for the irreversible conversion of important farmlands to non-agricultural uses. Important farmlands include pastureland, cropland, and forest considered to be prime, unique, or statewide or locally important land; or<br>• None of the exemptions to FPPA apply. These exemptions include:<br>  ○ When land is not considered "farmland" under FPPA; such as land already developed or already irreversibly converted. These instances include when land is designated as an urban area by the U.S. Census Bureau or the existing footprint includes rights-of-way.<br>  ○ When land is already committed to urban development.<br>  ○ When land is committed to water storage.<br>  ○ The construction of non-farm structures necessary to support farming operations.<br>  ○ The construction/land development for national defense purposes. | **No Impact.** The whole of the airport is classified as either "prime farmland if irrigated" or "prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season" by the NRCS, identified on Exhibit 1J. However, according to the U.S. Census Bureau 2010 Census[9], the airport is located in a non-urbanized area. Additionally, the airport is not currently used for agricultural purposes or irrigated for agricultural uses; therefore, FPPA will not apply to airport activities proposed on the recommended airport development concept plan. |
| **HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION** | |
| FAA has not established a significance threshold for Hazardous Materials, Solid Waste, and Pollution Prevention. However, factors to consider are if an action would have the potential to:<br>• Violate applicable federal, state, tribal, or local laws or regulations regarding hazardous materials and/or solid waste management;<br>• Involve a contaminated site;<br>• Produce an appreciably different quantity or type of hazardous waste;<br>• Generate an appreciably different quantity or type of solid waste or use a different method of collection or disposal and/or would exceed local capacity; or<br>• Adversely affect human health and the environment. | **Potential Impact.** The airport has a self-serve fuel island along South (S.) Airport Boulevard and provides opportunity for aircraft maintenance activities that could involve fossil fuels or other types of hazardous materials or wastes. These operations are regulated and monitored by the appropriate regulatory agencies, such as the U.S. EPA and the Arizona Department of Environmental Quality (ADEQ).<br><br>Currently, the tanks for this fuel island are underground (USTs) and located west of S. Airport Boulevard, while aircraft fueling occurs east of S. Airport Boulevard. The airport development concept plan recommends the USTs to be permanently removed and the fuel island will utilize above ground storage tanks (ASTs) adjacent to fueling activities. Removal of the USTs will require the airport to obtain a Noncorrective Action UST Permanent Closure Program certificate through the Arizona Department of Environmental Quality (ADEQ). |

9 U.S. Census Bureau Urbanized Area Maps (https://www2.census.gov/geo/maps/dc10map/UAUC_RefMap/ua/)

| | |
|---|---|
| | The recommended airport development concept plan proposed the relocation of the 100LL fuel island to a site adjacent to South (S.) Airport Boulevard and a new fuel island southeast of Runway 4R-22L. The owner(s) of the ASTs are required to be permitted through the Arizona Department of Fire, Building, and Life Safety.<br><br>The recommended airport development concept plan does not include land uses that would produce an appreciably different quantity or type of hazardous waste. However, should this type of land use be proposed, further NEPA review and/or permitting would be required. There are no known hazardous materials or waste contamination sites currently on airport property.<br><br>There will be no impact to Superfund or brownfields sites since they are not within five miles of the airport. |
| **HISTORIC, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES** | |
| FAA has not established a significance threshold for Historical, Architectural, Archaeological, and Cultural Resources. Factors to consider are if an action would result in a finding of "adverse effect" through the Section 106 process. However, an adverse effect finding does not automatically trigger preparation of an EIS (i.e., a significant impact). | **No Impact.** As identified in Chapter One, one historic resource, the Railroad Steam Wrecking Crane and Tool Car, is located less than one mile from the airport. However, it is unlikely airport activities will impact this structure because the crane is located west of South McQueen Street, within the Arizona Railway Museum located at the west end of Tumbleweed Park approximately one mile west. Due to this separation, it is unlikely the crane will be affected by airport development activities.<br><br>All other historic resources identified in Chapter One are located more than one mile from the airport and will not be affected by airport development activities. |
| **LAND USE** | |
| FAA has not established a significance threshold for Land Use. There are also no specific independent factors to consider. The determination that significant impacts exist is normally dependent on the significance of other impacts. | **No Impact.** One historic resource is located west of the airport; however, it is located west of South McQueen Street, which is approximately one mile from the airport. Due to this distance, it is unlikely to be impacted by airport activities. Single-family residential, a noise-sensitive land use, is present south of East Queen Creek Road, less than 0.5 mile from the Executive Hangar Development Reserve area identified on **Exhibit 5A**. |
| **NATURAL RESOURCE AND ENERGY SUPPLY** | |
| FAA has not established a significance threshold for Natural Resources and Energy Supply. However, factors to consider are if an action would have the potential to cause demand to exceed available or future supplies of these resources. | **Potential Impact**. Planned development projects at the airport could increase demands on energy utilities, water supplies and treatment, and other natural resources during construction; however, impacts are not anticipated to be long-term. Should long-term impacts be a concern, coordination with service providers is recommended. |
| **NOISE AND NOISE-SENSITIVE LAND USE** | |
| **Threshold: The action would increase noise by Day-Night Average Sound Level (DNL) 1.5 decibel (dB) or more for a noise-sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe.** | **Potential Impact. Exhibit 5E** depicts both 2019 and 2040 noise contours. In both existing and future conditions, the 65 DNL contour extends off airport property at the north, east, and south end of the airport. To both scenarios, the 65 DNL contour is anticipated to encompass commercial or industrial land uses but is not anticipated to affect any residential structures. |

| | |
|---|---|
| Another factor to consider is that special consideration needs to be given to the evaluation of the significance of noise impacts on noise-sensitive areas within Section 4(f) properties where the land use compatibility guidelines in Title 14 Code of Federal Regulations (CFR) part 150 are not relevant to the value, significance, and enjoyment of the area in question. | |
| **SOCIOECONOMIC, ENVIRONMENTAL JUSTICE, AND CHILDREN'S HEALTH AND SAFETY RISKS** | |
| **Socioeconomic** | |
| FAA has not established a significance threshold for Socioeconomics. However, factors to consider are if an action would have the potential to:<br>• induce substantial economic growth in an area, either directly or indirectly (e.g., through establishing projects in an undeveloped area);<br>• disrupt or divide the physical arrangement of an established community;<br>• cause extensive relocation when sufficient replacement housing is unavailable;<br>• cause extensive relocation of community businesses that would cause severe economic hardship for affected communities;<br>• disrupt local traffic patterns and substantially reduce the levels of service of roads serving the airport and its surrounding communities; or<br>• produce a substantial change in the community tax base. | **Potential Impact.** The proposed development plan for the airport could potentially encourage economic growth for the City of Chandler and surrounding communities. Results include new construction jobs, new jobs for the airport and other commercial uses, new housing, and increase the local tax base.<br><br>The proposed concept plan does not include any recommendations to acquire residences or relocate businesses.<br><br>New commercial development could change the level of service to roads leading to and within the airport, such as along East Queen Creek Road and S. Airport Boulevard. The long-term changes to the level of service are determined by the type of use proposed, and it may be necessary to perform a traffic study to ensure service is either not substantially impacted or mitigation measures are addressed. In the short-term during construction, there would be temporary disruptions to surface traffic patterns. |
| **Environmental Justice** | |
| FAA has not established a significance threshold for Environmental Justice. However, factors to consider are if an action would have the potential to lead to a disproportionately high and adverse impact to an environmental justice population (i.e., a low-income or minority population), due to:<br><br>• Significant impacts in other environmental impact categories; or<br>• Impacts on the physical or natural environment that affect an environmental justice population in a way that FAA determines is unique to the environmental justice population and significant to that population. | **Potential Impact.** Both low-income and minority populations have been identified in the vicinity of the airport.<br><br>Executive Order (E.O.) 12898, *Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations*, and the accompanying Presidential Memorandum, and Order DOT 5610.2, *Environmental Justice*, require the FAA to provide for meaningful public involvement for minority and low-income populations, as well as analysis that identifies and addresses potential impacts on these populations that may be disproportionately high and adverse. Environmental justice impacts may be avoided or minimized through early and consistent communication with the public and allowing ample time for public consideration.<br><br>If disproportionately high or adverse impacts are noted, mitigation and enhancement measures and offsetting benefits can be taken into consideration. |
| **Children's Health and Safety Risks** | |
| FAA has not established a significance threshold for Children's Environmental Health and Safety Risks. However, factors to consider are whether an action will have the potential to lead to a disproportionate health or safety risk to children. | **Potential Impact.** Per E.O. 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, federal agencies are directed to identify and assess environmental health and safety risks that may disproportionately affect children. These risks include those that are attributable to products or substances that a child is likely to encounter or ingest, such as air, food, drinking water, recreational waters, soil, or products to which they may be exposed. Within a close vicinity of the |


2019 Noise Contours
S McQueen Rd
Germann Road
E Queen Creek Rd
Runway 4L-22R 4,401' x 75'
Runway 4R-22L 4,870' x 75'
H
LEGEND
Existing Airport Property Line
Existing Avigation Easement
65-69 Day-Night Average Sound Level (DNL)
70-74 DNL
75+ DNL
Helipad
Ultimate Pavement
N
0
1,000
SCALE IN FEET
Photo: Woolpert 11/2019


2040 Noise Contours
S McQueen Rd
Germann Road
E Vegger Dr
E Queen Creek Rd
Runway 4L-22R 4,401' x 75'
Runway 4R-22L 4,870' x 75' ( 5,550' x 75' Ultimate)
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| | airport, seven schools have been identified (the location of these schools are labeled on Exhibit 1J in the Environmental Inventory). BMPs should be implemented to decrease environmental health risks to children.<br><br>During construction of the projects outlined in the recommended concept plan, appropriate measures should be taken to prevent access by unauthorized persons to construction project areas. |
| **VISUAL EFFECTS** | |
| **Light Emissions** | |
| The FAA has not established a significant threshold for light emissions. However, a factor to consider is the degree to which an action would have the potential to:<br>• Create annoyance or interfere with normal activities from light emissions; and<br>• Affect the visual character of the area due to the light emissions, including the importance, uniqueness, and aesthetic value of the affected visual resource. | **Potential Impact.** New lighting associated with the recommended airport development concept plan would remain on the airfield and other developed portions of the airport. Proposed lighting would most likely be associated with new development, such as wall pack lighting on new hangars and edge lighting for relocated taxiways. |
| **Visual Resources/Visual Character** | |
| FAA has not established a significance threshold for Visual Resources/Visual Character. However, a factor to consider is the extent an action would have on the potential to:<br>• Affect the nature of the visual character of the area, including the importance, uniqueness, and aesthetic value of the affected visual resources;<br>• Contrast with the visual resources and/or visual character in the study area; and<br>• Block or obstruct the views of the visual resources, including whether these resources would still be viewable from other locations. | **Potential Impact.** The development proposed in the recommended concept plan could change the overall visual character of the airport with additional roads and structures planned on-site. New development could change the character of the area, contrasting with the visual character from the nearby mountains.<br><br>Potential effects could be minimized by preserving as much natural vegetation as possible and integrating development into existing natural surroundings. |
| **WATER RESOURCES** | |
| **Wetlands** | |
| **Threshold: The action would:**<br>**1. Adversely affect a wetland's function to protect the quality or quantity of municipal water supplies, including surface waters and sole source and other aquifers;**<br>**2. Substantially alter the hydrology needed to sustain the affected wetland system's values and functions or those of a wetland to which it is connected;**<br>**3. Substantially reduce the affected wetland's ability to retain floodwaters or storm runoff, thereby threatening public health, safety or welfare (the term welfare includes cultural, recreational, and scientific resources or property important to the public);**<br>**4. Adversely affect the maintenance of natural systems supporting wildlife and fish habitat or economically important timber, food, or fiber resources of the affected or surrounding wetlands;**<br>**5. Promote development of secondary activities or services that would cause the circumstances listed above to occur; or**<br>**6. Be inconsistent with applicable state wetland strategies.** | **Potential Impact.** There is an engineered canals/drainage way (Consolidated Canal) identified as a wetland adjacent to airport boundary and proposed development, although this information is based on aerial photography interpretation from undated aerial photography. Field surveys and wetland delineations may be required to determine the presence or absence of wetlands in project areas.<br><br>Removal or relocation of wetlands may require a Section 404 permit under the *Clean Water Act*, which regulates the discharge of dredged or fill material into waters of the United States, including wetlands. |

| Floodplains | |
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| **Threshold: The action would cause notable adverse impacts on natural and beneficial floodplain values. Natural and beneficial floodplain values are defined in Paragraph 4.k of DOT Order 5650.2, *Floodplain Management and Protection.*** | **Potential Impact.** A 100-year floodplain associated with the Consolidated Canal was identified by FEMA on airport property (depicted in Chapter One on Exhibit 1J). E.O. 11988, *Floodplain Management*, requires federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of 100-year floodplains and to avoid direct or indirect support of floodplain development where there is a practicable alternative.<br><br>The proposed recommended airport development concept plan proposes the extension of Taxiway B and new non-aviation development along S. Airport Boulevard within the 100-year floodplain (**Exhibit 5A**). According to Maricopa County, the airport may be required to obtain a Floodplain Use Permit for any development or site improvements in a floodplain identified on the Official Floodplain Map. The Floodplain Manager shall review and approve this permit, if the development complies with the regulations set forth by the county.<br><br>Per E.O. 11988, *Floodplain Management, and Department of Transportation Order* (DOT) 5650.2, *Floodplain Management and Protection*, agencies are required to provide the public an opportunity for early public review of any plan or proposal encroaching into a floodplain. |
| **Surface Waters** | |
| **Threshold: The action would:**<br>**1. Exceed water quality standards established by federal, state, local, and tribal regulatory agencies; or**<br>**2. Contaminate public drinking water supply such that public health may be adversely affected.**<br><br>Factors to consider are when a project would have the potential to:<br>• adversely affect natural and beneficial water resource values to a degree that substantially diminishes or destroys such values;<br>• adversely affect surface waters 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<br>• present difficulties based on water quality impact when obtaining a permit or authorization. | **Potential Impact.** The airport manages airport stormwater discharges with an Arizona Pollutant Discharge Elimination System (AZPDES) issued and regulated by the ADEQ. Improvements to the airport will require a revised permit to be issued addressing operational and structural source controls, treatment best management practices (BMPs), and sediment and erosion control.<br><br>An AZPDES General Construction permit would be required for all projects involving ground disturbance over one acre. FAA's Advisory Circular (AC) 150/5370-10G, *Standards for Specifying Construction of Airports, Item P-156, Temporary Air and Water Pollution, Soil Erosion and Siltation Control* should also be implemented during construction projects at the airport. |
| **Wild and Scenic Rivers** | |
| FAA has not established a significance threshold for Wild and Scenic Rivers. Factors to consider are when an action would have an adverse impact on the values for which a river was designated (or considered for designation) through:<br>• Destroying or altering a river's free-flowing nature;<br>• A direct and adverse effect on the values for which a river was designated (or under study for designation);<br>• Introducing a visual, audible, or other type of intrusion that is out of character with the river or would alter outstanding features of the river's setting; | **No Impact.** The nearest designated Wild and Scenic River, the Verde River, is located approximately 60 miles from the airport. The closest river on the NRI is a segment of the Arnett/Telegraph Creeks, which is located approximately 36 miles east of the airport.<br><br>The recommended airport projects will not have adverse effects on these river's outstanding remarkable values (i.e., scenery, recreation, geology, fish, wildlife, and history). |

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| • Causing the river's water quality to deteriorate;<br>• Allowing the transfer or sale of property interests without restrictions needed to protect the river or the river corridor; or<br>• Any of the above impacts preventing a river on the Nationwide Rivers Inventory (NRI) or a Section 5(d) river that is not included in the NRI from being included in the Wild and Scenic River System or causing a downgrade in its classification (e.g., from wild to recreational). | |
| **Groundwater** | |
| **Threshold: The action would:**<br>**1. Exceed groundwater quality standards established by federal, state, local, and tribal regulatory agencies: or**<br>**2. Contaminate an aquifer used for public water supply such that public health may be adversely affected.**<br><br>Factors to consider are when a project would have the potential to:<br>• Adversely affect natural and beneficial groundwater values to a degree that substantially diminishes or destroys such values;<br>• Adversely affect groundwater quantities such that the beneficial uses and values of such groundwater are appreciably diminished or can no longer be maintained and such impairment cannot be avoided or satisfactorily mitigated; or<br>• Present difficulties based on water quality impacts when obtaining a permit or authorization. | **No Impact.** Proposed projects outlined on the recommend concept plan will not substantially change the amount of water used by the airport. Additionally, the airport property does not serve as a significant source of groundwater recharge and is not located near a sole source aquifer. |

*Source: Coffman Associates, Inc analysis*

## *SUMMARY*

This chapter has been prepared to help the City of Chandler make decisions on the future growth and development of CHD by describing narratively and graphically the Recommended Master Plan Concept. It details environmental and land use conditions that must be taken into consideration when implementing the development plan. The plan represents an airfield facility that fulfills aviation needs for the airport, while conforming to safety and design standards to the extent practicable. It also provides a landside complex that can be developed as demand dictates and is subject to further refinement pending comments from the PAC, City of Chandler, and public.

Flexibility will be very important to future development at the airport, as activity may not occur as predicted. The Recommended Master Plan Concept provides stakeholders with a general guide that, if followed, can maintain the airport's long-term viability, and allow it to continue to provide air transportation service to the region. The next chapter of this master plan will provide a reasonable schedule for undertaking the projects based on safety and demand over the course of the next 20 years.