V. FACILITY REQUIREMENTS AND RECOMMENDATIONS

This section outlines the requirements for initial facility development and recommended future development. It also presents an inventory of the existing airport facility.

Developments will be planned for both airside and landside facilities. Airside facilities are those directly related to the arrival and departure of aircraft including runways, taxiways, navigational aids, marking, airport lighting and aircraft parking. Landside development consists of all other improvements including terminal building, service and access roads, security, FBO facilities, utilities and automobile parking.

Inventory of Existing Airport Facility

The existing Chinle Airport landing area consists of a single earth runway approximately 90 feet wide and 4200 feet in length. The runway is aligned in a north/south direction, approximately 190 degrees magnetic. The condition of the runway surface varies with weather conditions and level of maintenance. During wet conditions and periods of snowfall, the runway is not useable and arriving pilots must utilize the Gallup or Window Rock Airports as alternates.

There is no Unicom service at the airport and no airport manager or FBO. Local pilots use frequency 122.90 for position reports. This frequency is monitored by the Chinle Hospital, but not as an advisory service.

The airport perimeter is surrounded by a four-strand barbed wire fence which is, for the most part, in good condition. There are, however, openings in the fence which allow pedestrians, horses and cattle to enter the property. Residents of the homes east of the runway frequently cross the runway and evidence of automobile traffic on the runway has been observed. Vandalism on the airport is not an uncommon occurence.

The aircraft parking area consists of two corrugated metal hangars, a fenced single aircraft parking space and a dirt tiedown area. One of the hangars will accommodate two aircraft and the other will accommodate one. The tiedown area extends north from the hangars and includes wing and tail tiedown cables, but no chains or ropes for securing transient aircraft.

The parking area is lighted by two streetlamp fixtures mounted on wood poles along the west perimeter fence.

Overhead electrical service enters the site from the northwest and follows the west perimeter fence southward, serving the apron lights and terminating at the hangars.

Runway lighting consists of low intensity stake mounted fixtures which are protected by pyramid-shaped steel mesh cases. The system is operational, but nighttime use of this facility is not recommended for pilots who are not intimately familiar with the runway configuration and existing obstructions.

There are currently three aircraft based at Chinle Airport. A Cessna 182 is operated by a local physician who is a Chinle resident. A Cessna 206 is operated by Monument Valley Air Service. A Piper Cherokee is operated by a local hotel construction company owner. No record of operations is available, but as many as nine operations (landings and takeoffs) were estimated to occur daily (Brady 1990).

Facility Requirements Development Criteria

The facility requirements for the Chinle Airport were developed under the following criteria.

1. The ultimate airport role classification of the Chinle Airport facility will be General Utility, Stage I. A General Utility, Stage I airport serves all small aircraft in Airplane Design Group I, which is defined in AC 150/5300-13, "Airport Design," (FAA 1989) as those aircraft having a wingspan of up to but not including 49 feet. The service level will be "General Aviation" (GA).

2. The first phase of development will result in a paved, all-weather airport capable of handling all day and night VFR operations of the existing general aviation fleet, 12,500 pounds single-wheel gross weight and less. This will include all small aircraft in Airplane Design Group I, Approach Categories A and B (speed less than 121 knots).

3. Future development will result in a facility capable of accommodating 75 percent of the general aviation aircraft fleet with gross takeoff weights of up to 60,000 pounds, limited to aircraft with gross takeoff weights under 30,000 pounds. These aircraft include the Learjet 20, 30, and 50 series, Sabreliner 40, 60 and 75 series, Cessna Citation I, II, and III, plus others. Provisions for a published non-precision instrument approach procedure to establish minimums will be included.

4. The dimensional standards and design cirteria for all physical improvements and airport imaginary surfaces shall be as detailed in AC 150/5300-13 (FAA 1989).

This study encompasses a 20-year planning period, from calendar year 1990 through 2009, inclusive. In this section, recommended facility improvements are presented for the initial phase of construction and for the airport in its ultimate configuration within the planning period. The actual recommended schedule of improvements is included in Section VIII, Capital Improvements Program and Financing. The improvements are presented graphically in Section VII, Airport Plans and Plan Implementation.

Airside Facilities

1. Runways. The determination of required runway length takes into consideration the airport site evaluation, maximum mean temperature of the hottest month of the year and the expected design aircraft or aircraft group which will use the facility.

   The runway length design curves for General Utility State I airports in AC 150/5325-4A, "Airport Design Standards", (FAA 1990) were used to determine the recommended first phase development lengths. A maximum mean temperature of 89 degrees Fahrenheit was assumed in all cases.

   The Basic Transport performance curves for 75 feet of the fleet (90 percent useful load) from AC 150/5325-4A (FAA 1990) were used to determine ultimate runway length requirements. For purposes of this phase of the Master Plan development, adjustments for runway gradient were not considered since they will be negligible based on the expected grading design.

   The recommended runway width is 75 feet for both the first phase and ultimate development. 60' minimum

2. Taxiways. First phase development should include turnarounds at each runway end. The design of these turnarounds should be such that the largest aircraft which will use the facility will be able to safely turn within the paved area without causing damage to the pavement surface.

   Future development should include the construction of a full parallel taxiway. The recommended width for all taxiway construction is 35 feet. 25' minimum

3. Aircraft Parking and Tiedown. The initial development of this facility should provide for a minimum of six open tiedown spaces for based aircraft (based upon forecast requirements) and one space for itinerant aircraft. The number of itinerant spaces required was determined based on observations made by Mr. James A Brady, pilot, Monument Valley Air Service (1990).

The parking apron should be paved at a design strength to accommodate aircraft of 12,500 pound single-wheel loading for the initial development.

Ultimate expansion within the planning period should provide five additional spaces for based aircraft and one additional itinerant space.

Two additional tiedowns should be provided as a large itinerant aircraft loading area. The pavement strength of this area should be designed for 30,000 pound single-wheel loading. Access routes for these areas should be designed for the larger aircraft.

4. Hangar Requirements. It is recommended that land be set aside for hangar development within the aircraft parking areas which may be leased to private parties for the construction of single aircraft hangars. The use, construction standards, color and type of hangar should be controlled by the airport governing authority in order to maintain a standard of safety, conformity and aesthetic appeal which will contribute to the progressive development of the airport.

   It is recommended that land be set aside for future construction of 1 FBO hangar and several T-hangars.

5. Airport Lighting and Visual Aids. The first phase of development will include installation of a medium intensity runway (MIRL) and taxiway lighting (MITL) system. The system should include base-mounted fixtures and all underground cable should be installed in conduit to increase the service life of the new system.

   If a Unicom is installed at the airport, provisions should be included for radio control of airport lighting. A lighted wind cone and segmented circle plus a rotating beacon will be included in the first phase of development.

   The future development should include installation of a Precision Approach Path Indicator (PAPI) or Generic visual approach descent indicator (PLASI) on both runway ends.

   Lighting of the future parallel taxiway will be required at its time of construction.

6. Airport Marking. The first phase of development will require basic visual runway and taxiway centerline markings, as well as apron tiedown markings, runway numerals and hold lines for visual flight rules operations.

At the time of implementation of the future instrument approach, the pavement markings must be upgraded to non-precision approach standards.

7. Navigational Requirements. Future development should include the development of a non-precision instrument approach procedure. Since the closest navagational aid (navaid) to Chinle Airport is 52 nautical miles southeast of Chinle (Gallup - GUP 115.1), a instrument approach is not feasible using existing navaid facilities. Therefore, it is recommended that a TVOR station be installed on the Chinle Airport site and that a very high frequency omni-directional range (VOR) or VOR/Distance Measuring Equipment (DME) approach procedure be established.

   The TVOR facility should be located at least 500 feet from the centerline of the runway and at least 250 feet from the centerline of any taxiway. No structures should be permitted within 750 feet of the TVOR antenna and structures beyond this distance must not penetrate a 1.2 degree vertical angle as measured from the antenna. Fences should not be permitted within 500 feet of the antenna and power or telephone lines should not located within 1,200 feet.

   The TVOR facility will require a minimum land area of 400 x 400 feet in order to provide for the grading requirements of the immediate area around the facility.

   DME may be co-located with the TVOR facility if it will provide a more useful approach procedure. The decision to include the DME should be a result of a flight evaluation, which is conducted by the FAA as a part of the navaid siting and instrument approach development procedures.

8. Fuel Facilities. Aviation fuel sales may be made available at the Chinle Airport by the Navajo Tribe or may be provided by a FBO under contract with the Tribe. Either arrangement will provide a source of airport revenue, which will help to fund future airport improvements.

   Initial development should include provisions for supplying 80 (red), 100LL (blue) and 100 (green) octane avgas for piston engine aircraft. A growing number of these aircraft are now type-certified to operate on automobile fuel. Consideration should be given to providing automotive fuel in addition to conventional aviation fuel.

   Future development should include provisions for supplying jet fuel as demand warrants.

9. Clear Zones. Runway clear zones for visual approach with a 20:1 approach slope, as described by FAR Part 77, are required

for the first phase of development. Additional land area will be required for future incorporation of a non-precision instrument approach procedure with a 20:1 approach slope, the maximum Utility Airport requirement.

It is recommended that adequate land be withdrawn in the first phase development in order to incorporate ultimate clear zone areas within the airport property. If this is not possible, clear zones may be secured through aviation easements granted by the Tribe.

10. Land Acquisition. The recommended minimum amount of land required for the ultimate development of Chinle Airport is 150 acres. The actual area may vary considerable from the guideline minimum depending upon the actual geometry and useable area of the selected site, and upon the actual land available for withdrawal.

    It is strongly recommended that all land required for the ultimate airport development be withdrawn in the initial phase of development, and that steps be taken to protect the integrity of the airport approach zones. These steps may consist of height restriction zoning or additional buffer land acquisition.

11. Control Tower. Airways Planning Standard 1 (APS-1) contains criteria for the establishment of a control tower. According to this standard, facilities become eligible for a tower when annual operations reach 200,000. The forecasted annual operations precludes the installation of an FAA-funded control tower.

Landside Facilities

1. Terminal Building. The first phase of airport development should include a terminal building to accommodate an airport management/administration office, restrooms, small lobby and pilot's flight planning area. Additional structures for FBO, restaurant facilities or possibly commuter airlines may be provided by private enterprise as justified by the future need for these services.

2. Automobile Parking. Initial development should include a graded parking area of adequate size to accommodate a minimum of seven automobiles. In future development, the parking area should be paved and expanded to accommodate a minimum of ten additional automobiles.

3. Access Roads. A paved, all-weather automobile access road is recommended for initial development. This road should be designed to accommodate the largest vehicle (i.e., fuel truck)

which will utilize it. Minimum roadway width should be 24 feet.

4. Utility and Infrastructure. Provision for a sanitary sewage disposal system should be included in the initial development phase. This system should be designed to adequately handle the ultimate public and private improvements on the airport property. Land should be set aside for leach fields and evapotranspitation beds as necessary for these requirements plus 100 percent.

   The establishment of a well pumping system and water distribution system will be necessary during the initial development phase. This system should be designed to adequately handle ultimate public and private demands.

   Telephone and electrical service should be installed during the initial development phase.

5. Fencing and Security. It is recommended that the airport property be completely enclosed with a four-strand barbed wire fence as part of the initial development phase. Cattle guards should be installed at all vehicular entrances.

   Construction of based aircraft hangar and tiedown areas and the automobile storage area should include enclosure with a six-foot chain link fence and access to these areas should be limited to aircraft owners. Airport security lighting for all aircraft and automobile parking areas should be installed concurrent with the development of these facilities.

   Since airport security will depend on availability of airport management, it is strongly recommended that a full-time manager be provided for the Chinle Airport. Management services may be provided directly by the Tribe through employment of an experienced manager, or may be provided through a management service under contract to the Tribe.