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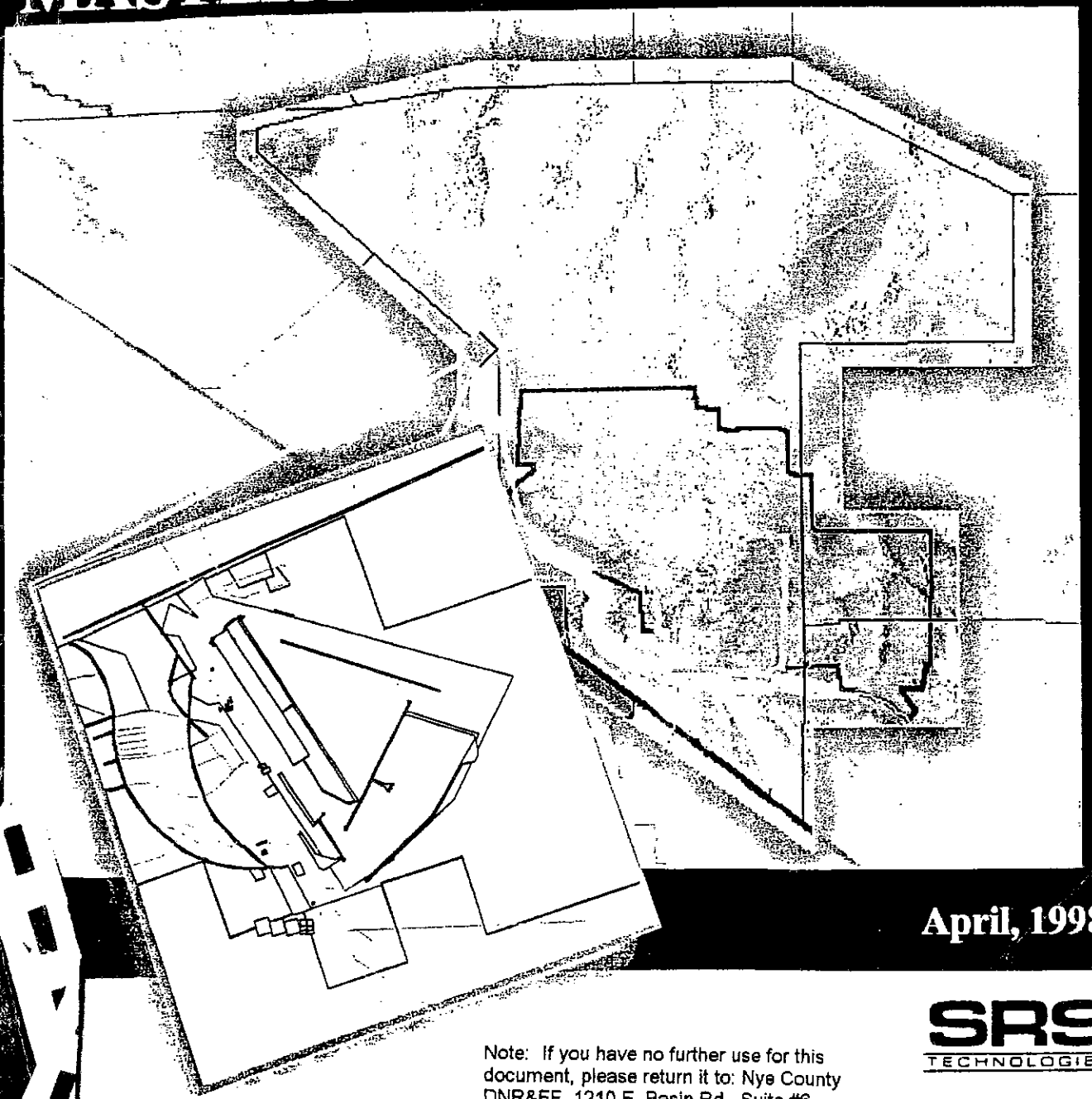
onopah Aeronautics nd Technology Park

NTS Development Corporation

MASTER PLAN



April, 1998

SRS TECHNOLOGIES

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Tonopah Aeronautics and Technology Park

Master Plan

April 1998

SRS TECHNOLOGIES

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List of Acronyms

ACIP	Airport Capital Improvement Plan
ADG	Airplane Design Group
ADT	Average Daily Traffic
AFB	Air Force Base
AIP	Airport Improvement Program
ALP	Airport Layout Plan
AOR	Airport Operating Rules
ARTCC	Air Route Traffic Control Center
BLM	Bureau of Land Management
CFR	Crash/Fire/Rescue
CNRA	Central Nevada Racing Association
CO	Carbon Monoxide
CTAF	Common Traffic Advisory Frequency
dB	Decibels
dBA	A-weighted decibel
DoD	Department of Defense
DOE	U.S. Department of Energy
DNL	Daily Noise Levels
EA	Environmental Assessment
EIS	Environmental Impact Statement
F	Fahrenheit
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
FBO	Fixed Base Operator
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FICON	Federal Interagency Committee on Noise
FIRM	Flood Insurance Rate Map
FSS	Flight Service Station
HIRL	High Intensity Runway Lights
HUD	Housing and Urban Development
I	Interstate
IFR	Instrument Flight Rules
KV	Kilovolt
MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NAFR	Nellis Air Force Range
NDOT	Nevada Department of Transportation
NEPA	National Environmental Policy Act
NLR	Noise Level Reduction
NM	Nautical Miles
NO_2	Nitrogen Dioxide
NOTAM	Notice to Airmen
NPIAS	National Plan of Integrated Airport System
NRHP	National Register of Historic Places
NSASP	Nevada State Airport System Plan
NTS	Nevada Test Site
NTSDC	Nevada Test Site Development Corporation
O_3	Ozone
OFA	Obstacle Free Area
OFZ	Obstacle Free Zone
PAPI	Precision Approach Position Indicator
Pb	Lead
PCPI	Per Capita Personal Income

PM_{10}	Particulate matter less than 10 microns in diameter
ppm	Parts per million
RMP	Range Management Plan
RPZ	Runway Protection Zones
RSA	Runway Safety Area
RVR	Runway Visual Range
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SR	State Route
TACAN	Tactical Air Navigation
TPI	Total Personal Income
TPU	Tonopah Public Utilities
TTR	Tonopah Test Range
TRMP	Tonopah Resource Management Plan
UBC	Uniform Building Code
UNLV	University of Nevada at Las Vegas
USACOE	U.S. Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Services
UST	Underground Storage Tank
VASI	Visual Approach Slope Indicator
VFR	Visual Flight Rules
VORTAC	Very high frequency omni-directional range with tactical air navigation

SECTION 1.0 EXECUTIVE SUMMARY

1.1 INTRODUCTION

The Nevada Science and Technology Corridor is an economically challenged region which extends through southern Nevada along U.S. Highway 95 from Indian Springs (Clark County) and Pahrump (Nye County) in the south to the community of Tonopah in the north, passing through Amargosa Valley, Beatty (Nye County), and Goldfield (Esmeralda County). The region has high economic development potential due to its attractive business climate and proximity to major federal activities.

The concept of the Corridor was developed to broaden the economic base of the region by promoting a common vision. The Corridor is an outgrowth from years of effort by Nye County to strengthen its economic base by diversifying its economy while also benefiting from nearby major federal facilities such as the Nevada Test Site (NTS), Tonopah Test Range (TTR), the Nellis Air Force Bombing and Gunnery Range (Nellis), and Yucca Mountain.

The focus of this study is on the Tonopah Aeronautics and Technology Park, one component of the Nevada Science and Technology Corridor. This Master Plan was developed from several phases, including: an Existing Conditions Report; an Airport Layout Plan (ALP); and a Concept Development Plan. These phases reviewed constraints and opportunities to create recommendations for future development.

1.2 PLANNING FACTORS

Issues identified during the early phases of the project include:

- The majority of new development will likely occur in Parcel No. 2 due to existing airport activities and infrastructure.
- Airfield components must be modified and/or increased to accommodate Federal Aviation Administration (FAA)-projected operations and aircraft at the airport.
- Although some infrastructure exists at the airport, improvements and expansions will be necessary to accommodate increased development.
- The airport currently has several leases for a variety of uses. These leases must be considered in any development options.
- Alternative development options should be pursued, including Airport Industrial Parks and the privatized maintenance of military aircraft.

1.3 VICINITY OVERVIEW

1.3.1 Airport Location

The Tonopah Airport is located seven miles east of the town of Tonopah along U.S. Highway 6. The airport consists of approximately 3,700 acres. The surrounding land is owned and managed by the Bureau of Land Management (BLM). Certain portions of the BLM land are available for acquisition by the County.

The airport is comprised of three parcels: Parcel No. 1, consisting of 550 acres; Parcel No. 2 (975 acres), and Parcel No. 3 (2,171 acres). An additional parcel (No. 4 - 156 acres) is located south of the airfield and is used as a sewage treatment plant. Parcel No. 3 contains the airfield, while Parcels No. 1 and 2 have commercial, industrial, and residential leases of various sizes and durations. These parcels have previously been designated for "non-

aviation revenue producing" uses by agreement with the FAA.

1.3.2 Airfield

The airfield consists of two runways. Runway 15-33 (primary) is 7,162 feet long and 75 feet wide, and is oriented north-northwest by south-southeast. Runway 11-29 (secondary/crosswind) is 5,400 feet long and 50 feet wide, and is oriented northwest by southeast.

There is a 40 foot wide parallel taxiway that serves Runway 15-33. Smaller taxiways link the south ends of both runways, but they are in poor condition and no longer used. An aircraft parking apron is located alongside the parallel taxiway; near the northern end is an improved area with 43 tiedowns for general aviation.

Navigational and landing aids include the Tonopah VORTAC; a lighted tetrahedron and wind sock; a rotating beacon; and a 4-box, two-bar visual approach slope indicator (VASI). There is 2-light precision approach position indicator (PAPI) along Runway 15-33 that is currently inoperable. Runway 15-33 is lighted, while Runway 11-29 is not.

1.4 RECOMMENDATIONS

Recommendations for development were made after a review of existing conditions, development constraints, and land use opportunities.

1.4.1 Airport Layout Plan

Recommendations from the ALP (April, 1998) are listed below and were incorporated into the planning process:

- The ALP recommends that Runway 15-33 be extended to 9,100 feet to accommodate ARC B-II aircraft, the "critical" design aircraft designated by the FAA for this airport.
- Runway 11-29 should be reconstructed, extended to a length of 7,300 feet, and widened to 75 feet.
- A Pavement Condition Report should be conducted prior to design.
- Approach surfaces should increase to 50:1 for Runway 15-33 (precision) and 34:1 for Runway 11-29 (non-precision).
- Approximately 160 acres of land should be obtained from the BLM adjacent to the sewage treatment plant to accommodate the Runway 15-33 expansion.
- When the runways are extended, the existing outer closed taxiway should be repaved and reopened.
- The ultimate design should include an extension of the mid-field taxiway that currently connects the parallel taxiway and Runway 15-33.
- The recognition and protection of existing navigation easements should take place before any development occurs.
- The FAA strongly discourages any residential land uses on airport property.
- The FAA has identified the location of the sewage treatment plant as a potential issue. The plant must be covered or relocated to accommodate the runway extension.

Additional information on these and several other recommendations may be obtained from the ALP.

1.4.2 Development Potential

Development at the airport may be impeded by issues such as land acquisition, airfield operations and constraints, existing leases and land uses, roads, utilities, and environmental issues. The analysis of these issues resulted in the designation of "development areas," which were categorized as high, medium, and low potential.

Areas with the highest development potential are within Parcel No. 2, outside of floodplains and existing development.

Areas with medium development potential occur adjacent to the airfield in Parcel No. 1 and south of the airfield between Runways 15-33 and 11-29. Areas of low development potential occur on the airfield, in areas under runway approach slopes, and within floodplains in Parcels No. 1 and 2.

1.4.3 Initial Facilities

Two initial development sites are recommended in this Master Plan: an industrial park and an area dedicated to depot-level aircraft maintenance.

Airport Industrial Park

The industrial park is located on approximately 40 acres immediately north of the FAA/FBO complex, and west of the airfield. Although this industrial park may be used for non-aviation purposes, its location and proximity to the flight line make it an ideal location for an Airport Industrial Park.

The integration of properly sited industrial development within airports can bring long term economic benefits to communities and to the airports which serve them. Easy highway access, flat terrain, existing utilities, availability of air transportation, and the lack of significant development constraints combine to make this site a strong candidate for industrial development.

An extensive set of guidelines for planning the Airport Industrial Park is included in an appendix to this Master Plan (Appendix A).

Adversary Aircraft Facility

The other initial development area is dedicated to a potential Adversary Aircraft Facility supporting depot-level maintenance of tactical jet aircraft. This function has been identified has having a strong possibility of occurring at the Tonopah Airport. For planning purposes, this Master Plan provides space to accommodate 58 tactical jets. Thus, approximately 140 acres has been set aside within Parcel No. 2 south of the refinery and west of the existing parking apron.

To provide an idea of the scope of facilities required by this type of operation, a basic facilities list has been prepared and is included as an attachment to this Master Plan (Appendix B). The requirements are based on DoD criteria for A-4 aircraft.

1.4.4 Long Term Expansion Plan

Once the initial facilities have been provided, additional development will be drawn to the Tonopah Aeronautics and Technology Park. Anticipating this, an expansion plan has been proposed. The area along the flight line between the FAA/FBO complex and the Adversary Aircraft Facility should be reserved for commercial aviation and support. Should the lease on the refinery not be renewed, this area would also be dedicated to commercial aviation activities.

Non-aviation related industrial, commercial, and recreational uses are proposed for the areas located further from the airfield. These areas may benefit from proximity to the airport, but do not necessarily require direct access to aircraft movement areas.

The floodplain area within Parcel No. 2 provides a natural buffer between aviation and non-aviation uses. Likewise, floodplains within Parcel No. 1 are considered to be open space due to the limitations of the floodplain, in addition to the lack of infrastructure in this area.

1.5 FUTURE RECOMMENDED STUDIES AND ACTIONS

1.5.1 Recommendations

In order to make the Tonopah Aeronautics and Technology Park a reality several action will be required:

- **Market Analysis.** Identify industry associations and potential commercial firms that might be interested in expanding or relocating to Tonopah.
- **Aircraft Maintenance Facility.** Verify the viability of the Adversary Aircraft Facility and plan the area dedicated to that purpose accordingly.
- **Submit Airport Capital Improvements Plan.** Prepare and submit the Tonopah Airport Capital Improvements Plan (ACIP) to the FAA to begin the funding timeline for planned improvements.
- **Pavement Condition Report.** Prepare a Pavement Condition Report on Runway 11-29 and the outer closed taxiway to support reconstruction funding by the FAA.
- **Runway 11-29 Operations.** Monitor the use of Runway 11-29 (number of operations, aircraft type, etc.) to justify reconstruction under Phase II of the ACIP.
- **Land Ownership.** Complete coordination with the FAA to resolve ownership of the airfield.
- **Sewage Treatment Plant.** Prepare an engineering study to modify or relocate the sewage treatment plant to meet FAA requirements.
- **Avigation Easements.** Implement, through ordinance, formal recognition and protection of the approach areas into each runway, as identified in the ALP.
- **Airport Operating Rules.** Prepare Airport Operating Rules (AORs) for review by the FAA prior to implementing new projects.
- **Telecommunications.** Expand a modern, high-data rate, telecommunications network to the Tonopah Airport to support business and industry.
- **Land Acquisition.** Work with the BLM to acquire approximately 160 acres of land at the approach end of Runway 33 to accommodate runway expansion.
- **Corridor Development Authority.** Establish a Corridor Development Authority to plan, oversee, and implement economic development in the Nevada Science and Technology Corridor. Coordinate with other efforts along the Corridor.
- **Perform an Infrastructure Engineering Analysis Report.** This report is needed to assess the current infrastructure, including utility capacity, and identify the ability of the current system to handle increased use. Coordinate with Tonopah Public Utilities (the permitting agency) for additional service, as needed.
- **Covenants and Restrictions.** Develop a plan with covenants and deed restrictions for initial development sites.
- **Historic Resources.** Conduct a historic resource evaluation of the three remaining World War II hangars and other old building areas to determine their eligibility for listing in the National Register of Historic Places. Apply for grant funding to preserve the properties (possibly as part of a historical museum) once eligibility is determined.
- **Fuel Farm.** Conduct an Engineering Study to relocate the fuel farm.
- **Soil Survey.** Conduct soils tests around the refinery to determine if any contamination exists. Mitigate as necessary prior to leasing adjacent areas.
- **Hazardous Material Sites.** Conduct an engineering study at other potential hazardous waste sites, as indicated in this plan and as shown on historic maps.
- **Coordinate with the Army Corps of Engineers.** Formally consult with the USACOE to determine if the washes and floodplains within the airport qualify as "Waters of the US."
- **Noise Study.** A noise study should be conducted at the airport, particularly if the Adversary Aircraft Facility becomes a reality.

1.5.2 Environmental Documentation

To help ensure successful implementation of the Master Plan recommendations, it is

important that all environmental requirements are initiated early in the planning implementation stage. Environmental documentation and applicable permits are required for many of the recommended actions.

Any improvement involving a "federal action" is evaluated in accordance with the National Environmental Policy Act (NEPA). This usually involves an Environmental Assessment (EA), or, for more complicated or controversial issues, an Environmental Impact Statement (EIS). It is believed that, based on the analysis in this document, an EA should be sufficient to meet environmental documentation requirements.

SECTION 2.0 INTRODUCTION

2.1 THE NEVADA SCIENCE AND TECHNOLOGY CORRIDOR

The Nevada Science and Technology Corridor (see Figure 2-1) is an economically challenged region which extends through southern Nevada along U.S. Highway 95 from Indian Springs (Clark County) and Pahrump (Nye County) in the south to the community of Tonopah in the north, passing through Amargosa Valley, Beatty (Nye County), and Goldfield (Esmeralda County). Historically, the region has been utilized to support the national defense through experimental research and testing activities (i.e., Nevada Test Site [NTS]). However, a 1992 moratorium on nuclear testing and Department of Energy (DOE) and Department of Defense (DoD) reductions resulted in workforce cutbacks which deeply affected the economy of southern Nevada.

The concept of the corridor was developed in an effort to broaden the economic base of the region by developing a diversified development strategy and to integrate past federal facility-related initiatives under a common vision. The corridor is an outgrowth from years of effort by Nye County to broaden its economic base by more substantially benefiting from being the hosting location to major federal facilities, which include the NTS, Tonopah Test Range (TTR), and a portion of the Nellis Air Force Bombing and Gunnery Range (Nellis). The region, geographically set in rural southern Nevada, yet adjacent to some of the nation's most technologically advanced defense facilities, is intended to be a catalyst for community action and a method to attract public and private sector jobs and investment.

2.2 PURPOSE OF THE PLAN

The purpose of the Nevada Science and Technology Corridor project is to facilitate marketing and orderly economic development within the corridor, and to serve as a means to obtain necessary funding while producing a coherent vision for the future through the development of several documents. These documents, which will include new and updated planning reports, will identify various elements of the proposed Nevada Science and Technology Corridor and describe the facilities and land use needs projected to meet future requirements. The work products produced for the Nevada Science and Technology Corridor will be used to further economic development in the region. Grant applications for various improvements will be based on the development of the various Master Plan documents.

This document represents the Master Plan for the Tonopah Aeronautics and Technology Park at the Tonopah Airport, which is one element of the Nevada Science and Technology Corridor. This Master Plan was developed in several phases, which are described below.

2.3 METHODOLOGY

Planning efforts for the Tonopah Aeronautics and Technology Park were conducted in four phases. An overview of the master planning process is shown on Figure 2-2.

Phase I: Existing Conditions Report

The first step in the process involved the preparation of an Existing Conditions Report. This report was prepared by collecting data on all physical assets (i.e., buildings), transportation and circulation patterns, and any known environmental considerations (i.e., cultural, biological).

Nevada Science and Technology Corridor

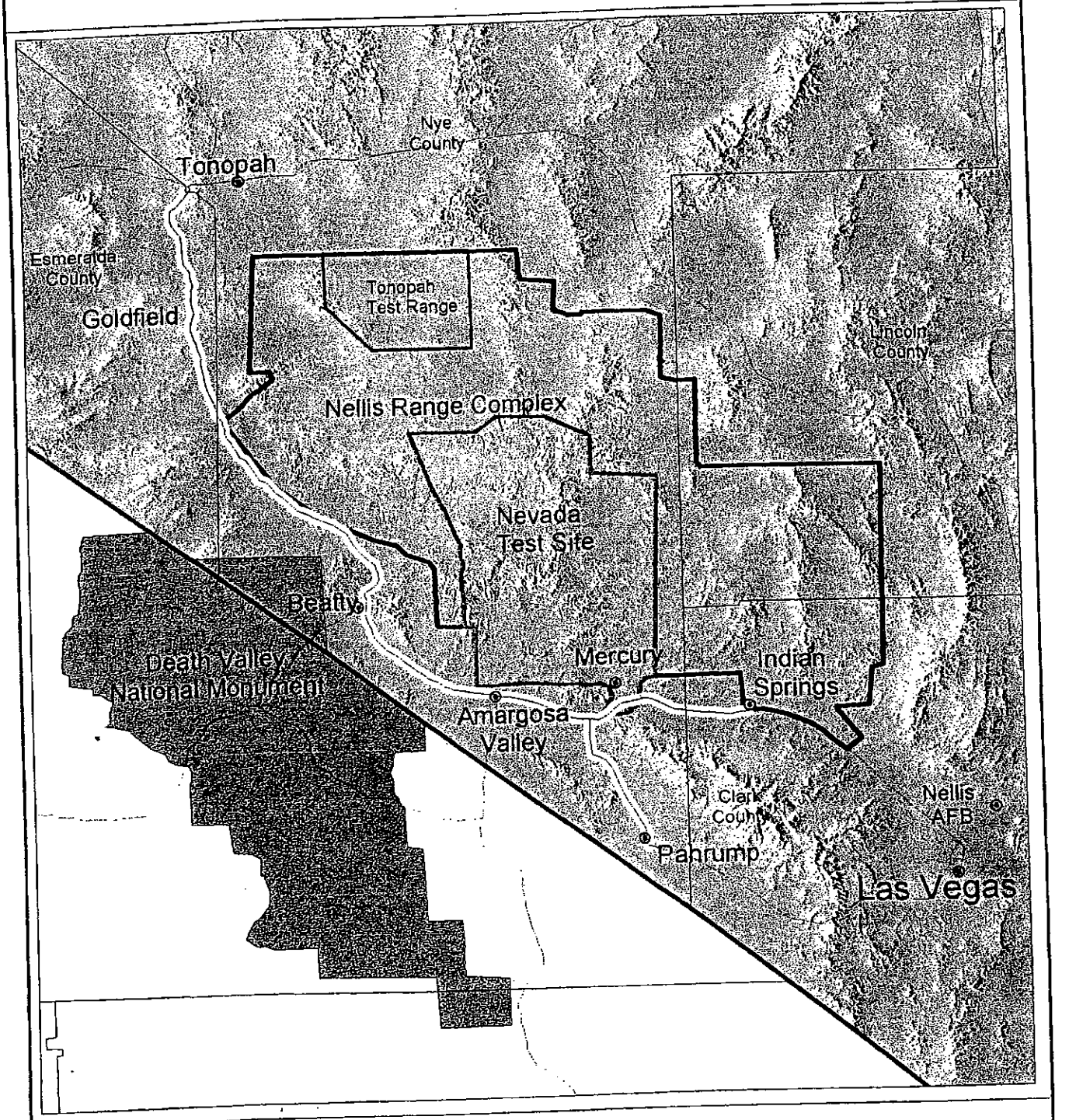
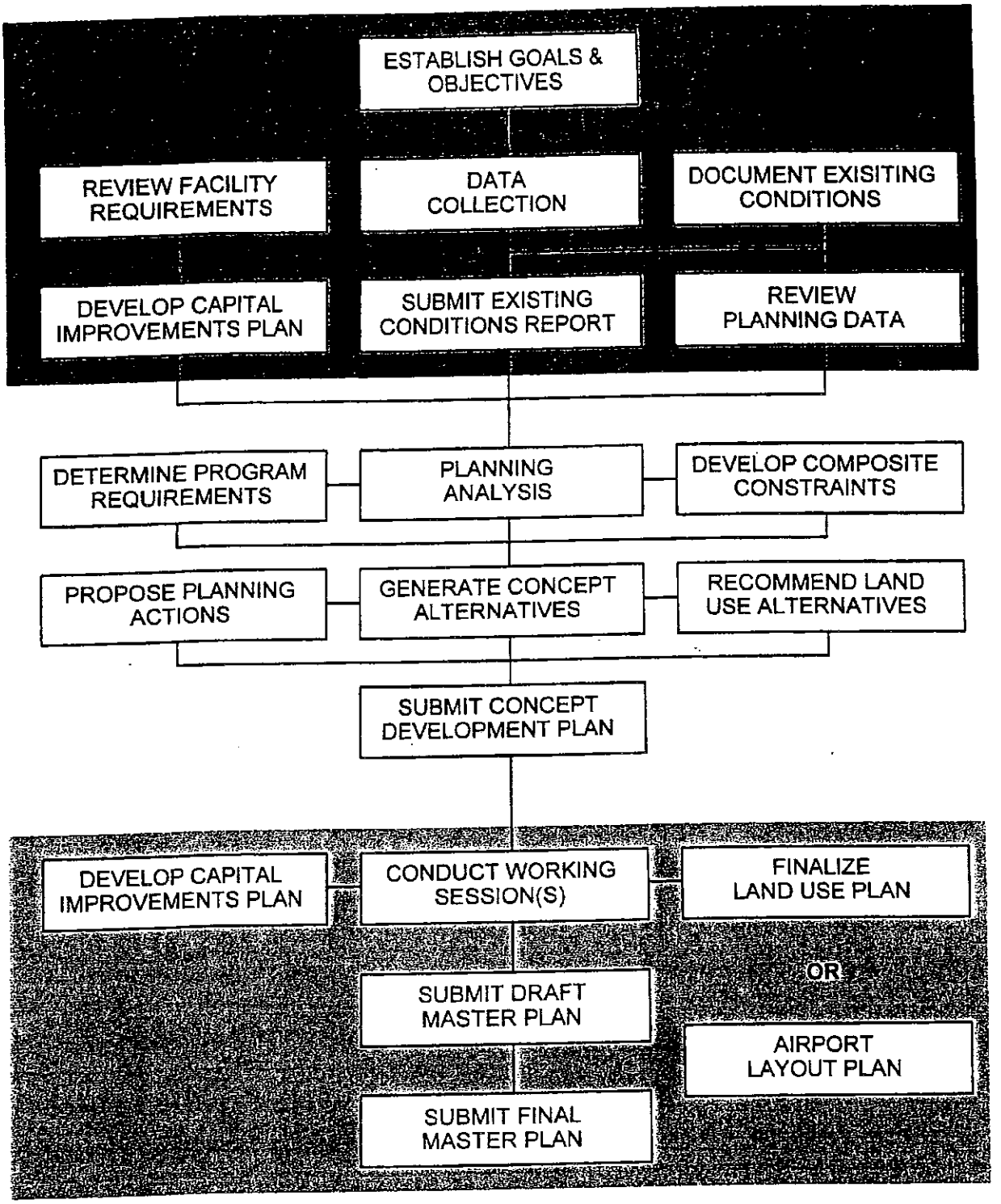


Figure 2-1

Figure 2-2 Master Planning Process



Based on the information collected, the Existing Conditions Report was developed to document the current state of the proposed Tonopah Aeronautics and Technology Park.

Phase II: Tonopah Airport Layout Plan Update

Concurrent with development of the existing conditions report for the Tonopah Aeronautics and Technology Park, an Airport Layout Plan (ALP) was revised and updated. The ALP is a graphic representation of existing and anticipated airport facilities, their location at the airport, and necessary clearance and dimensional information required to show compliance with applicable standards. Current planning guidance and procedures approved by the Federal Aviation Administration (FAA) were utilized.

In October 1985, Nye County started a county-wide Airport Master Plan Study under the FAA's Airport Improvement Program (AIP). The study was intended to determine the type and extent of aviation facilities needed on a county-wide basis through the year 2005. Tonopah Airport's ALP was last updated at that time (1987).

Phase III: Concept Development Plan

The next step in the process involved the development of a Concept Development Plan, which identified development opportunities, constraints, options, and recommendations for consideration by potential users of the corridor. The scope of facilities required to support the Tonopah Aeronautics and Technology Park and land use opportunities were identified during this phase.

Phase IV: Master Plan

The Master Plan is an important element in identifying potential uses for a site or region. For this project, the Master Plan was organized to emphasize and present economic development information (e.g., regulatory issues, operational issues, planning and zoning issues). In addition, the Master Plan includes information analysis related to the planned use of the facility, constraints and opportunities for project development, and a preferred concept alternative. The intent is to provide a vision for the future of this northern anchor of the Corridor.

2.4 PLANNING GOALS

In 1996, the Nevada Test Site Development Corporation (NTSDC) sponsored a visioning session for regional agencies and interested participants. Among the key issues identified were the importance of economic diversification, education, and concerns for insuring an exceptional quality of life in southern Nevada.

The result of this effort was Vision 2020, a planning activity that explores the possible future for southern Nevada's urban and rural economies. One outcome from Vision 2020 has been the conclusion that the emerging southern Nevada economies could realize substantial growth if a diversified development strategy were pursued.

Vision 2020 incorporates a four-county region whose economy and demographics are dominated by Clark County, home of over 95 percent of the southern Nevada population. The other three counties are Nye, Esmeralda, and Lincoln, which together contain less than 5 percent of the region's population and economic base. Yet despite the current dominance of Clark County, there are advantages in considering the future mix and distribution of activity in the region as a whole - advantages that may accrue both to its rapidly developing urban core and sparsely settled rural periphery.

The document "Vision 2020 Today - A Shared Vision of Southern Nevada's Global Future," outlined summary proposals as the result of the visioning

sessions. These proposals outline major goals for the entire southern Nevada area. The proposals are outlined below in their entirety to set the context in which the Nevada Science and Technology Corridor and the Tonopah Aeronautics and Technology Park are set.

Regional Economy

- Create global enterprise alliances by building upon existing strengths in gaming and leisure industries.
- Expand convention facilities to maintain a competitive advantage for mega-showplace services.
- Develop and implement marketing strategies targeted at locating new business operations related to corporate attendees at trade shows held in southern Nevada.
- Define new corporate targets and market the region to high wage, high-value industries of the future.
- Develop strategies for the creation of local businesses to meet southern Nevada demands for goods and services not currently met by local firms.
- Establish an aggressive network of regional investment contacts and local growth financing resources to finance local company start-ups and expansion.

Infrastructure

- Expedite development and ultimate expansion of the monorail system linking McCarran International Airport with gaming-tourism core facilities.
- Hasten development of high-speed ground transportation between southern Nevada and southern California.
- Obtain federal, state, and local funding commitments to complete the Las Vegas Valley Beltway.
- Encourage installation of digital telecommunications infrastructure in developing areas.
- Secure the transfer of public land needed by state and local governments for future public facilities.
- Formulate and implement a region-wide infrastructure capital improvements program for 21st Century needs.
- Seek international research partnerships in water conservation, treatment, and reuse commercialization.
- Ensure a permanent water supply to sustain projected levels of growth.

Lifestyle

- Organize public/private partnerships to establish major league professional sports teams in the southern Nevada region.
- Increase the availability of open space and community-based recreation facilities.
- Reduce crime rates through enhancements of youth activities, expanding school-to-work training initiatives, and promoting greater parental responsibility.
- Pursue public-private partnerships in air quality research and technology commercialization.
- Promote community design goals which facilitate the integration of work centers with recreational and residential land uses.
- Establish University of Nevada at Las Vegas (UNLV) "Centers of Excellence" including the design and application of entertainment as well as leisure industry technologies.
- Privatize public land in southern Nevada needed for quality growth and community expansion through the year 2020.

2.5 POTENTIAL FOR DEVELOPMENT

Nye County's population base is less than 40,000 people, distributed in towns geographically isolated from one another in a region which is more than 18,000 square miles in size. In a study completed for the NTSDC, and using a scenario that

assumes a more diversified economic base, rural southern Nevada has the potential to grow to 180,000 people by the year 2020 (Nye County 1997).

The Nevada Science and Technology Corridor has the potential to develop a more diversified economic base. For example, the rural economy of southern Nevada has recently expanded to include oil production, tourism, and retirement living, but the impacts of these activities are widely scattered. Historically, southern Nevada has contributed to military weapons research and development facilities, hosting the location of large federal and military facilities such as NTS and Nellis.

For reasons of geography and historical development patterns, Nye and Esmeralda counties and the northwest portion of Clark County are the best positioned counties in southern Nevada to economically benefit from hosting these facilities. With the end of the Cold War era, new uses are being considered for NTS, including an aerospace satellite launching facility and a solar power generator complex. In addition, the Tonopah Airport is being considered as a potential base for privatized military tactical aviation services, as well as a maintenance-level aircraft depot operations.

The keys to success in such an endeavor will include maintaining the opportunities presented by hosting regional federal activities; developing commercial and industrial parks; establishing a sophisticated telecommunication network that will support business and industry in domestic and international markets; and maintaining an effective marketing capability. With the development of key commercial and industrial parks (i.e., Tonopah Aeronautics and Technology Park), the Nevada Science and Technology Corridor could be the catalyst for a leading technology-driven economy.

2.6 REVIEW PROCESS

An Advisory Committee was formed with representatives from the business community, town boards, and NTSDC for the purposes of developing and facilitating development along the Nevada Science and Technology Corridor. Each phase of the planning process was developed in conjunction with the Advisory Committee. Working sessions were conducted to collect and incorporate input. Members of the public were also involved in working sessions to review the planning process presented during the Concept Development Phase. The following is a summary of the meetings and deliverables relevant to the planning process:

- *Kick-off Meeting.* The Kick-off Meeting was held on 14 October 1997, to introduce the planning team and discuss issues related to the planning process.
- *Site Visits.* Based on input from the kick-off meeting, multiple site visits were held in October and November, 1997, to collect data and identify key data sources for the deliverables.
- *Economic Development Workshop and Site Visit.* On 19-20 November 1997, an economic development workshop and site visit was held in order to obtain additional input and information regarding development of the planning process.
- *Tonopah Existing Conditions Report.* The Existing Conditions Report was submitted on 19 December 1997.
- *Tonopah Airport Layout Plan (ALP).* The updated Draft ALP was submitted on 9 January 1998.
- *Advisory Committee Meeting.* On 22 January 1998, the first Advisory Committee Meeting was scheduled to review the Existing Conditions Report and the ALP, as well as to discuss general concepts for the future use of the Tonopah Airport.
- *FAA Consultation Meeting.* A consultation and review meeting was held with the FAA in San Francisco on 17 February 1998. The purpose was

to receive FAA comment and direction on the Tonopah Airport Master Plan . and ALP.

- *Advisory Committee Meeting*. An additional meeting was held in Beatty with the Advisory Committee on 11 March 1998 to obtain additional comments and questions related to the planning effort.
- *Tonopah Aeropark Master Plan*. On 8 April 1998, the Final Master Plan and ALP were submitted.

2.7 MASTER PLAN

The Master Plan incorporates the existing conditions, as well as the preferred plan for the Tonopah Aeronautics and Technology Park. This document presents the various opportunities, constraints, planning alternatives, and land uses for capital improvement development and grant proposals. Concurrent with this Master Plan, an ALP has been developed which is the only part of the project that is formally approved by the FAA. The ALP will be used as the vehicle to secure federal funding for future airfield projects.

SECTION 3.0
REGIONAL PROFILE

3.1 REGIONAL LOCATION

Nye County is located in south-central Nevada and is bordered by Esmeralda and Mineral counties to the west; Churchill, Lander, Eureka, and White Pine counties to the north; Lincoln and Clark counties to the east; and the State of California to the south (Figure 3-1).

With 11,560,960 acres of land, Nye County is the largest county in Nevada and the third largest in the continental United States. Approximately 93 percent of the land area in the county is managed by the federal government for various uses, including the Nellis Air Force Bombing and Gunnery Range, NTS, National Wildhorse Management Area, Toiyabe National Forest, Duckwater Indian Reservation, Humboldt National Forest, Railroad Valley Wildlife Management Area, Wayne E. Kirch Wildlife Management Area, a part of Death Valley National Park, and Ash Meadows National Wildlife Refuge. Communities within Nye County are widely scattered; the two largest towns in the county (Tonopah and Pahrump) are 165 miles apart (Nevada Department of Transportation, 1997).

3.2 REGIONAL SETTING

Nye County lies within the Great Basin, a plateau of isolated mountain ranges separated by arid basins. The county's topography reflects a complex geologic history that remains unstable; the region experiences occasional earthquakes. The Great Basin's area of interior drainage consists of only a few small permanent rivers. Most streams in the region are ephemeral and flow only after heavy storms.

Nevada's location in the Sierra Nevada rain shadow makes it the driest state in the country. Annual precipitation averages three inches in the southern part of the state. With marine air blocked by its western mountains, southern Nevada has temperatures characteristic of a subtropical desert, with cold winters and very hot summers. The topography, dry air, and clear skies result in a wide diurnal temperature range, with a July mean temperature of 85 degrees Fahrenheit (F) and a January average of 43 degrees F; the frost-free season lasts from 200 to 250 days.

Nye County is sparsely populated; established communities include Pahrump, Amargosa Valley, Beatty, Tonopah, Gabbs, and the Duckwater Indian Reservation. The town of Tonopah encompasses 67 square miles and sits at an elevation of 6,200 feet above mean sea level (MSL). The Tonopah Airport, which comprises approximately 3,700 acres, is located seven miles east of the town in Ralston Valley and sits at an elevation of 5,426 feet MSL.

3.3 REGIONAL HISTORY

3.3.1 Historic Overview of the Area

It is believed that the Western Shoshone first migrated into the region approximately 1,000 years ago; however, their time of migration is disputed. The Paiute also settled into the general area. During the time of historic contact (when contact with Europeans first occurred), the area was split between Paiute and Western Shoshone territory. The generally accepted boundary between the Western Shoshone and Northern Paiute is located in the vicinity of the Mineral-Esmeralda County line. Within the Tonopah area, Western Shoshone camps existed at Stonewall Mountain, Green Creek, Horse Canyon, and Rose's Spring on the west side of the Kawich Range; the Reveille Mill on the east side of the Kawich; Stone Cabin; Tybo; Warm Springs; Hot Creek; Twin Springs; Moray; Duckwater; Darrough's Hot Springs in the Big Smoky

Regional Location

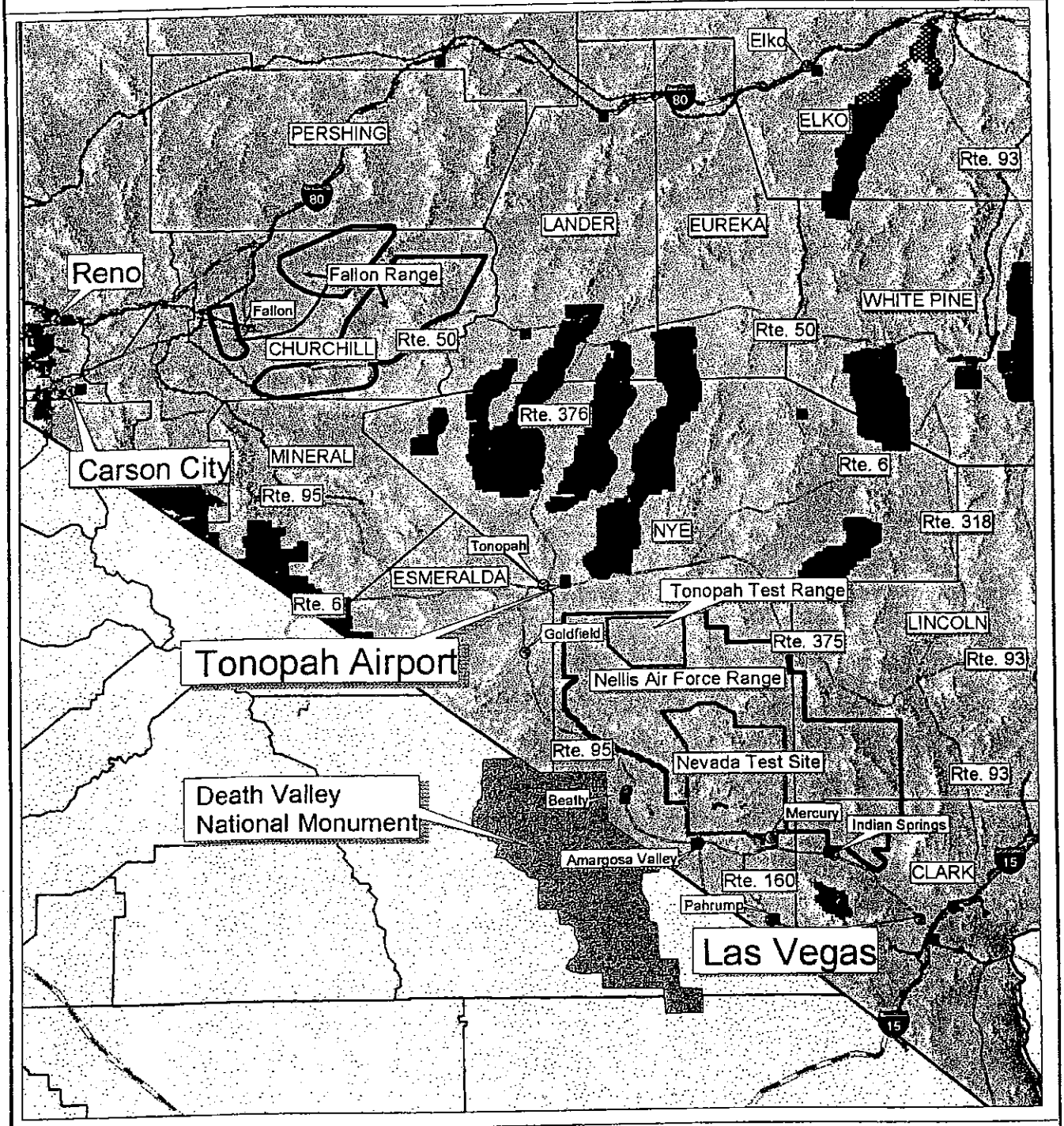


Figure 3-1

Valley; Peavine Creek; and other locations in the region.

The first Europeans visitors arrived around 1827. The Europeans were attracted to the Western Shoshone territories after many mineral resources were discovered, such as the Comstock Lode in western Nevada and deposits in the Reese River Valley and the Toiyabe and Toquima mountains. The search for gold, silver, and other precious metals spread rapidly through Nevada. Silver Peak, about 30 miles southwest of Tonopah, became a mining district in 1865. Candelaria, located about 25 miles west of Tonopah, was established in 1875. Jim Butler, well known in Tonopah's history, collected his first samples in May, 1900, in Sawtooth Pass. He located several claims including the Desert Queen, the Burro, Mizpah, Valley View, Silver Top, Buckboard, and the Red Plume. Tonopah grew slowly and steadily between 1900 and 1910. However, people left Tonopah quickly after Jim Butler sold out because little opportunity remained for more mining discoveries. Tonopah, however, continued in ore production. Between 1901 and 1921, Tonopah's mines produced 8.1 million tons of ore worth $147,600,000. This would be worth more than $1.3 billion in 1998 dollars.

Mining production in Tonopah dropped significantly in 1930. It rose slightly between 1931 to 1937, but leveled off in 1939. Tonopah fell into economic depression in 1940, and underground mining never recovered. However, just when the town of Tonopah was at its end, a new economic force arrived. In 1940, the U.S. Army began constructing the Tonopah Army Air Corps Base seven miles east of Tonopah. This was the beginning of the area's reliance on the U.S. government and military to provide the community with economic stability.

3.3.2 Nellis Air Force Bombing and Gunnery Range and Tonopah Test Site

Nellis Air Force Base (Nellis) has been used for flight operations since 1929. Until 1940 the field consisted of dirt runways, a few buildings, and related utilities. On 29 October, 1940, President Roosevelt established the Las Vegas Bombing and Gunnery Range, now called the Nellis Air Force Range (NAFR). From 1940 to 1959, co-use of portions of the NAFR were granted to cattlemen and miners.

Nellis began as the Army Air Corps Flexible Gunnery School in 1941, initially training B-17 gunners. During the height of World War II, more than 600 B-17 gunners and 215 co-pilots graduated from the school every five weeks. In March 1945 the B-17 gunnery program gave way to crew training for the then new B-29. Following the end of the war, the base was placed on temporary standby status, finally closing in January 1947. The base was reopened in 1949 and renamed a year later in honor of 1st Lt. William Harrell Nellis, a Nevada resident who was killed in action on 27 December 1944. He was flying over Luxembourg on his 70th P-47 combat mission.

The Range today continues to provide training for composite strike forces which include every type of aircraft in the U.S. Air Force inventory. Training is also conducted in conjunction with air and ground units of the U.S. Army, Navy, and Marine Corps, as well as air units from allied nations.

Most of the 4,742 square mile NAFR is located in Nye County, but portions are also located in Lincoln and Clark counties. The northwest border of Nellis is located approximately 15 miles from the town of Tonopah; the TTR is located in this area. Nellis' work force of about 8,200 military and civilian personnel make it the largest single employer in Southern Nevada. Las Vegas' military population numbers more

than 60,000, counting family members and military retirees in the area.

During the 1970s and 1980s, activities on the TTR expanded and provided additional employment opportunities, especially during the military buildup of the Reagan administration. The 37th Tactical Fighter Wing with F-117 Stealth fighters was based on the Range until the early 1990s.

3.3.3 Nevada Test Site

The NTS is located at the southern end of the Nellis Range in Nye County. After the closure of the Tonopah Army Air Corps Base and liquidation of most of its facilities in 1948, there was little activity at military facilities in Nye County. However, in the spring of 1949, NTS was chosen as the site for atomic testing. Between 1951 and 1989, approximately 700 nuclear devices were detonated at NTS. This facility was a major factor in the economies of Nye and Clark counties in the mid 1980s, involving either directly or indirectly approximately nine percent of the workforce in southern Nevada (McCracken, 1990).

A unique national resource, the NTS is a massive outdoor laboratory and national experimental center. Larger than the state of Rhode Island, it covers 1,350 square-miles, making this one of the largest secured areas in the United States. The remote site is surrounded by thousands of additional acres of land withdrawn from the public domain for use as a protected wildlife range and for a military gunnery range, creating an unpopulated land area comprising some 5,470 square miles. Established as the Atomic Energy Commission's proving ground, the NTS has seen more than four decades of nuclear weapons testing.

Since the nuclear weapons testing moratorium in 1992, and at the direction of the DOE, the test site has diversified into many other programs such as hazardous chemical spill testing, emergency response training, conventional weapons testing, and waste management and environmental technology studies. The most important part of the NTS mission is to retain the capability to resume nuclear testing if called upon to do so. Even with the ultimate mission still in place, the NTS is actively pursuing an Expanded Use policy including a Waste Management Program for waste generated at the NTS and other DOE sites; Non-defense Research and Development; and a Work for Others Program which includes a variety of different activities. Although the 1992 nuclear weapons testing moratorium caused a major down sizing of the NTS work force, the current Expanded Use concept should bring positive results.

3.3.4 Tonopah Army Air Corps Base

In 1940, the U.S. Army began construction of the Tonopah Army Air Corps Base, currently the Tonopah Airport. By 1943 the base was ready for operation. The main purpose of the base was to provide fighter (and later bomber) aircraft crew training. Air base facilities included runways, mess halls, and a hospital. By 1943, 2,006 men (227 officers and 1,779 enlisted) were stationed at the base. In 1943, an additional $8 million worth of improvements began on the base. Improvement projects included construction of a concrete apron 600 feet wide and 1 mile long; two taxiways totaling 10,000 linear feet; a reinforced concrete water storage reservoir holding 1 million gallons; 140 buildings of various functions; a sewage disposal system; and an 8-inch, 14 mile pipe line to supply water from wells at Rye Patch (McCracken, 1990).

The base reached its peak population in 1944 with 6,537 officers and enlisted men. A large number of civilians also lived on-base at this time. However, the base experienced a decline in growth the next year, with the number of soldiers decreasing to 4,144. One week after the fighting ended in the Pacific, the Tonopah Army Air Corps Base was placed on

inactive status, and in 1948 the base was deactivated and many of the facilities were sold for scrap. All that is left of the base today are the runways, taxiways, and three hangers which are in various stages of disrepair.

3.3.5 Yucca Mountain Repository

Yucca Mountain is located approximately 15 miles east of Beatty, on land controlled by the federal government. After the U.S. Congress passed the Nuclear Waste Policy Act in 1982, the DOE proposed to designate Yucca Mountain as the nation's first high-level nuclear waste repository. Legislation was later passed in December of 1987 designating Yucca Mountain as the candidate site due to the area's aridity and sparse population, the large amount of nuclear testing that had taken place at NTS over more than 35 years, and the necessity of restricting the area for thousands of years. The facility is designed to safely isolate large quantities of highly toxic and dangerous nuclear waste from the human environment for about 10,000 years.

The U.S. Congress has assigned responsibility for the nation's nuclear waste disposal system to the DOE. The Nuclear Waste Policy Act and its amendments directed the Office of Civilian Radioactive Waste Management (OCRWM) within the DOE to develop, construct, and operate a system for spent nuclear fuel and high-level radioactive waste disposal, including a permanent geologic repository, interim storage capability, and transportation system. Since the late 1950s, the American people have relied more and more on nuclear energy. Nuclear power plants now supply about one-fifth of the electricity used to light and heat homes, schools, factories, offices, and farms. OCRWM is responsible for the planning, research, and management necessary to dispose of spent nuclear fuel produced by commercial nuclear power plants and Government-owned high-level radioactive waste.

Currently, as the nuclear fuel that generates electricity in reactors is used, or "spent," it is removed and stored in specially designed pools of water, or in some instances, placed into heavy, thick-walled metal or concrete structures for above-ground dry storage at reactor sites. Such storage has proven safe, but is only intended to be a temporary solution. The temporary facilities store the material until a permanent repository opens.

The ultimate goal of the nuclear waste management system is the establishment of a permanent geologic repository. Teams of scientists are studying Yucca Mountain from the surface as well as from underground tunnels to test such characteristics as the likelihood of volcanic or earthquake activity, or the potential movement of water through the mountain. The depth of the proposed repository would be about 300 meters (1,000 feet) below the surface but still about 240 meters (800 feet) above the water table within a very hard layer of rock called volcanic tuff. If the site is found suitable, and compliance with regulatory requirements can be met, operation is scheduled to start in 2010. If it is found unsuitable, studies will be stopped, the site will be restored, and DOE will report to Congress within six months on a recommended course of action.

3.4 POLITICAL JURISDICTIONS

3.4.1 Public/Federal Lands

Approximately two-thirds of the State of Nevada is administered by the U.S. Bureau of Land Management (BLM), mostly for grazing, mining, or dispersed recreation. Another seven percent of the state is National Forest land. Other federal lands include military reservations, wildlife refuges, reclamation sites, Native American lands, and national parkland. Only one percent of Nevada is state-owned.

Almost 93 percent of Nye County is managed by the federal government for uses similar to those described above. However, about 22 percent of the land is

under limited or restricted access, including 19 percent which has been withdrawn from public use for special federal purposes. Other unique federal uses within Nye County include potentially hazardous facilities, including the NTS, the Beatty Low-Level Radioactive and Hazardous Waste Disposal Facility, and the DoD Low-Level Radioactive Waste Disposal Facility on the NTS. These conditions have economic and transportation implications for the county, since access restrictions make it difficult to travel from one area to another.

Within Nye County, Gabbs is the only incorporated city. The towns of Pahrump, Tonopah, and Round Mountain have a Town Board form of government; the Town of Amargosa Valley has a Town Advisory Board; and the Town of Beatty has a Citizens' Advisory Board (Nye County Board of Commissioners 1994).

A number of issues and concerns surrounding the use of public lands were identified in the *Nye County Comprehensive Plan* (Nye County Board of Commissioners 1994), which include the following:

- The U.S. Congress has identified Yucca Mountain as the sole candidate site for the nation's first high-level civilian nuclear waste repository. The Yucca Mountain site is located on public lands within Nye County. The site includes land currently managed by the BLM and withdrawn for use by DOE and DoD. The development of a repository at Yucca Mountain could profoundly affect Nye County's future economy and the quality of life of its residents.

- The DoD has relocated the 37th Tactical Fighter Wing from the TTR. This relocation has had significant economic implications for Tonopah and Nye County.

- The U.S. Congress has initiated a temporary moratorium on the testing of nuclear weapons. There is a good possibility that the moratorium may evolve into a permanent ban. Such a ban would have substantial effects on the activity at NTS. Nye County wants the right to participate in the planning for economic adjustment, environmental clean-up, and reuse of the NTS facility.

- There is increasing concern for the viability and volatility of the ranching industry in Nye County. Ranching and grazing are traditional economic activities and a source of both primary and secondary income for a number of Nye County residents. Moreover, the ranching lifestyle is an important part of Nye County's culture. The County has an interest in protecting its agricultural and ranching heritage.

- Similarly, there is increasing concern for the viability of the mining industry in Nye County. Currently, an estimated 1,500 Nye County residents earn their livelihoods directly from mining. Many other residents receive indirect benefits from the mining industry. The Nye County government receives a substantial portion of its revenues as the result of mining operations.

3.4.2 Private Lands

Private land use in Nye County consists of residential, commercial, and industrial uses, primarily within the boundaries of unincorporated towns, and agricultural and mining uses both within and outside the boundaries of the towns. Much of the land within communities is subject to mixed use; it is common to find residential, commercial, industrial, and even agricultural uses on adjacent or even the same properties.

Many people have moved to Nye County because of the broad freedoms available and because of the ability to purchase land and develop and build on that land with limited restrictions. As mandated by the

state, Nye County has in place ordinances regulating the subdivision of land; however, the county has no zoning ordinance. As Nye County grows, potential conflicts between existing and new land uses can be anticipated to increase, as well as problems associated with the absence of enforced building regulations.

3.5 POPULATION AND SOCIOECONOMICS

3.5.1 Population

Nye County is one of 17 counties in the State of Nevada. The 1996 population for Nye County was 25,240, ranking it 6th in the state (Nevada State Library and Archives 1997).

Population statistics for Nye County, the State of Nevada, and the United States are listed in Table 3-1. Although the county has grown faster than both the State of Nevada and the United States, only certain areas of the county are experiencing population growth. Pahrump almost tripled in population between 1980 and 1990; Beatty nearly doubled between 1985 and 1990. Other areas experienced growth in the 1980s but are facing declines (Tonopah, Beatty) because of a reduction in employment opportunities including mining operations and military activities.

Table 3-1
Population Trends for Nye County, the State of Nevada, and the United States, 1970-1996

Region	*1970*	*1980*	*1990*	*1996*
Nye County	5,599	9,048	18,190	[1]25,240
State of Nevada	488,738	800,493	1,218,702	1,603,163
United States	203,302,031	226,545,805	249,397,990	265,283,783

Note[1]: Several population estimates have been given for Nye County; however, for this report, the U.S. Bureau of the Census data were utilized. The low 1996 population estimate was 23,963; the high population estimate was 29,346. Source: Baseline and Economic and Demographic Projects: 1990-2010, Planning Information Corporation, May 1993.

Source: U.S. Bureau of the Census 1996.

3.5.2 Regional Economy

Employment and Income

Nye County's economy is based primarily on mining, military and other government activities, agriculture, construction, and portions of the retail trade and service sectors. The service sector is the largest employment element in Nye County; in 1990, it employed almost 3,000 residents, or 35 percent of total resident employment. This sector includes jobs at NTS and TTR, tourist-oriented jobs, and service establishments and professional services (e.g., doctors, accounts, etc.) for residents of the county. Other important sectors to the regional economy include mining, construction, retail trade, government (including federal, state, and local sectors), and agriculture. In 1990, mining accounted for about 1,500 jobs (18 percent of total employment). However, the mining industry is in a decline, as has been experienced recently by Tonopah and other areas. Construction accounted for over 900 jobs (11 percent), retail trade accounted for about 750 jobs (9 percent), government employment accounted for about 630 jobs (8 percent), and farming and agriculture accounted for about 245 employees (3 percent).

Nye County's economy, which has changed little since World War II, has recently experienced influences which have substantially impacted the region. These factors are briefly described below:

- *Employment at federal facilities.* With the development of NTS in the 1950s, federal facilities employment became one of the major basic employment sectors in the county economy. Employment has been decreasing since the end of the Cold War era. Employment at the TTR has also decreased.

- *Recreation and tourism.* Nye County, with its proximity to Death Valley and Las Vegas and its location on U.S. Route 95, has been experiencing increased tourist and recreation revenue.

- *Telecommuting.* An emerging employment sector in Nye County is that of professionals who work at home due to the county's low cost of living, proximity to Las Vegas and southern California, and clean desert environment.

- *Growth and Development in Pahrump.* Pahrump's economy was based on agriculture until the 1970s; however, recent growth and development has occurred from the increase in commuters to Las Vegas, real estate sales and construction, and retirees.

Per Capita Personal Income

Table 3-2 depicts per capita personal income (PCPI) for Nye County, the State of Nevada, and the United States. In 1995, Nye County had a PCPI of $18,462. This PCPI ranked 15th in the state, was 75.8 percent of the state average ($24,361), and 79.6 percent of the national average ($23,196). The 1995 PCPI reflected an increase of 7.1 percent from 1994. The 1994-95 state change was 9.5 percent, and the national change was 6.2 percent.

Table 3-2
Per Capita Personal Income for Nye County and the State of Nevada - 1995

Per Capita Personnel Income	*Amount*
Nye County	$18,462
State of Nevada	$24,361
% of State Average	75.8
% of National Average	79.6

Source: Regional Economic Information System, Bureau of Economic Analysis 1995.

Total Personal Income

The total personal income (TPI) for Nye County in 1995 was $453,164,000. This TPI ranked Nye County 7th in the state and accounted for 1.2 percent of the state total. The 1995 TPI reflected an increase of 14.8 percent from 1994. The increase in TPI for Nye County was greater than increases at state (9.5 percent) and national (6.2 percent) levels.

When examining the components of TPI (which includes earnings, dividends, interest, rent, and transfer payments), Nye County increased its TPI, with noticeable increases from 1994 to 1995. Earnings increased 19.0 percent; dividends, interest, and rent increased 6.3 percent; and transfer payments increased 9.4 percent.

Earnings by Industry

Earnings by persons employed in Nye County decreased from $365,128,000 in 1994 to $363,924,000 in 1995, a decrease of 0.3 percent. The largest industries in 1995 were services (54.3 percents of earnings), mining (17.6 percent), and state and local government (10.1 percent). Of the industries that accounted for at least five percent of earnings in 1995, the slowest growing was services, which decreased 6.2 percent. The greatest increase was retail trade (5.1 percent of earnings in 1995), which increased 17.5 percent.

The largest industries for the state in 1995 were services (43.7 percent of earnings), state and local government (10.1 percent), and construction (9.7 percent). During the same period earnings in Nye County decreased 0.3 percent, while earnings in the state increased 10.3 percent.

Based on labor force comparisons from 1996-1997, the state reported an employment increase of 7.7 percent, while unemployment dropped 4.4 percent. Although Nye County reported an overall employment increase of 9.0 percent, unemployment decreased only slightly to 4.9 percent (Table 3-3).

Table 3-3
Total Labor Force Two Year Comparison (1996-1997)

Region	*Characteristics*	*Sept. 1996*	*Sept. 1997*	*%t Change*
State of Nevada	Labor Force	858,600	912,500	6.3
	Employment	810,100	872,100	7.7
	Unemployment	48,500	40,400	-16.7
	Unemploy. Rate	5.7%	4.4%	----
Nye County	Labor Force	12,920	14,080	9.0
	Employment	12,280	13,390	9.0
	Unemployment	640	690	7.8
	Unemploy. Rate	5.0%	4.9%	----

Source: State Demographer's Office, 1997.

3.6 REGIONAL TRANSPORTATION NETWORK

3.6.1 Roadways

The major highway in Nye County is U.S. Route 95, a north-south highway which links Oregon, Nevada, and California (Figure 3-2). U.S. Route 95 extends from Oregon, passing through Tonopah, Beatty, Amargosa Valley, and Las Vegas as it continues into California. U.S. 95 is the main travel route between Las Vegas and Reno, offering panoramic views of the mountain topography. Other major roadways include U.S. Route 6, a east-west highway which links California and Utah. U.S. 6 extends from Bishop, California, passing through Tonopah and joining U.S. Route 50 in Ely before continuing to Delta, Utah. State Route (SR) 376, a north-south highway, begins to the east of Tonopah and extends north to its intersection with Highway 50. SR 265, located to the southwest of Tonopah, links U.S. Route 6 and U.S. Route 95 to Silver Peak. Numerous other roadways cross Nye County; however, many of these routes are unpaved connector routes.

3.6.2 Rail Service

Rail service presently is not available in Nye County. The nearest rail line is the Thorne Branch route, located west of Tonopah in central Mineral Country. The primary rail lines run along the northern end of Nevada in an east-west direction parallel to Interstate 80 (I-80); both the Union Pacific and Southern Pacific operate lines in this region. In addition, Union Pacific runs a north-south line near the Arizona border from Las Vegas to Caliente; Southern Pacific runs a north-south line near the Arizona border from Ely (Nevada) north of I-80.

3.6.3 Air Service

Air service is available throughout Nye County; however, the closest commercial jet service to Tonopah (the county seat) is located at Ely (approximately 167 miles to the northeast) or Las Vegas (approximately 208 miles to the southeast). Transport/business jet, basic utility, landing strip, and private airports are available within the county. In southern Nye County, Beatty Airport and Jackass Aeropark (Amargosa Valley) are basic utility airports, and Pahrump has two landing strip airports. In the east, Currant Ranch and Duckwater are landing strip airports; in the northwest, Gabbs has a basic utility airport and Hadley (Round Mountain) is a private airport; in the west, the Tonopah Airport is a transport/business jet airport.

Regional Transportation Network

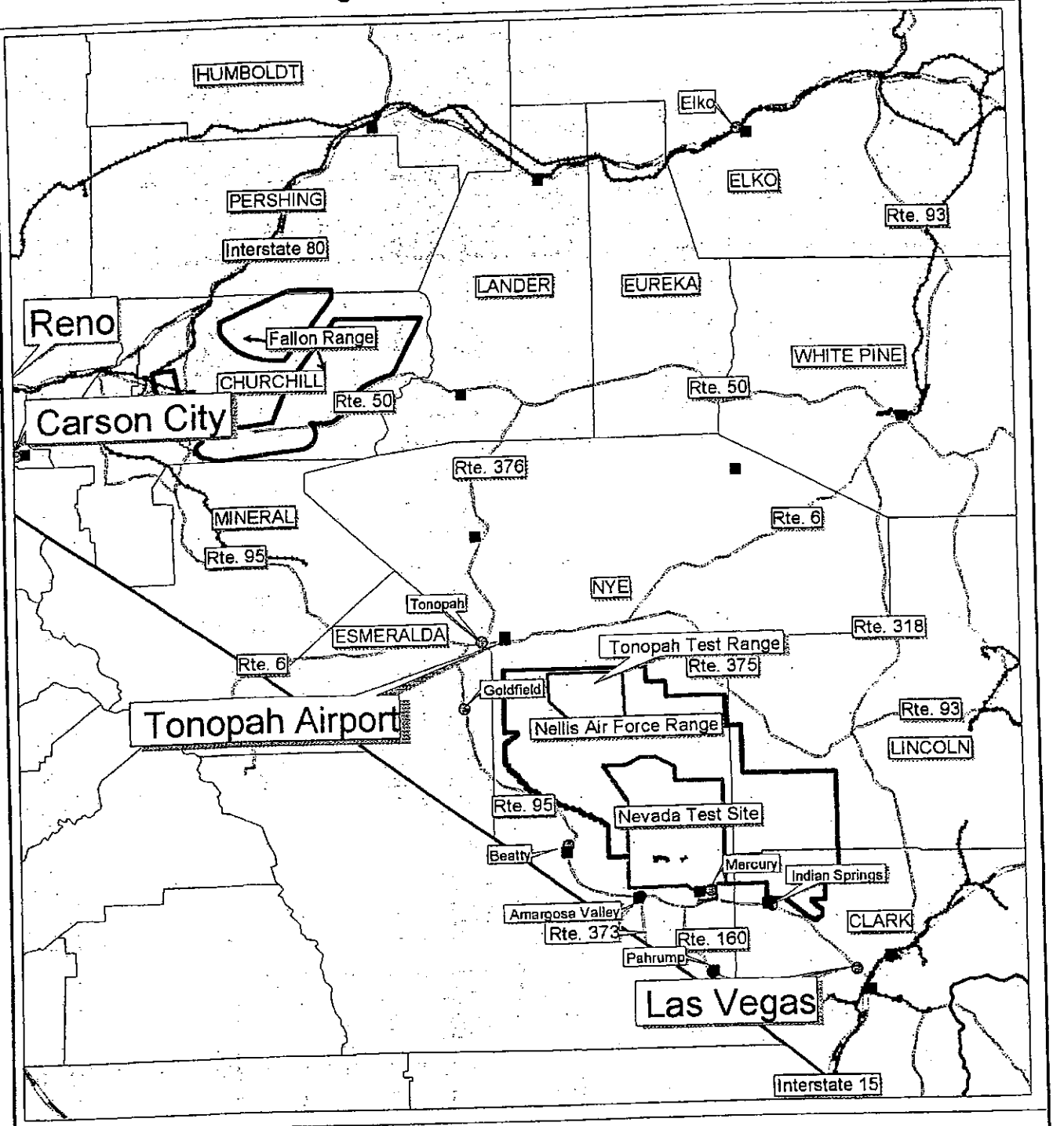


Figure 3-2

SECTION 4.0
TONOPAH VICINITY OVERVIEW

4.1 VICINITY LOCATION

Located midway between Las Vegas and Reno at the intersection of U.S. Highways 95 and 65, Tonopah, the county seat, is the major crossroads of south-central Nevada. Tonopah, an unincorporated town established in 1901, encompasses 67 square miles of land. The Tonopah Airport (site of the proposed Tonopah Aeronautics and Technology Park) is located seven miles east of the town along U.S. Highway 6 (See Figure 4-1).

4.2 VICINITY SETTING

Tonopah and the surrounding vicinity is typical of the Great Basin geographical province. The town of Tonopah sits at an elevation of 6,200 feet MSL; the Tonopah Airport is located at 5,426 feet MSL. The area has north-south trending mountain ranges separated by wide internally drained basins. Vegetation is characterized by salt-tolerant plants that require little water. The basin and range topography results in a wide temperature range and little precipitation; annual precipitation averages 5.32 inches. Average temperatures range between 44 and 18 degrees F in January, and 91 and 56 degrees F in July.

4.3 SOCIOECONOMICS AND POPULATION

As the county seat, Tonopah's economic base includes government employment and a growing traveler and tourist economy; however, mining, construction, and ranching have also been important sectors in the economy. According to the Nevada State Data Center, mining is still the leading industry in Tonopah, followed by construction. However, recent layoffs at area mines and the transfer of the 37th Tactical Fighter Wing from the TTR have resulted in a population decline, economic loss for Tonopah, and higher unemployment rates than the state or national average.

The 1980 population for Tonopah was 1,952, which grew to 4,107 by 1990. Since then, however, the population has decreased. The 1996 Census reported a total population of 3,100 for Tonopah, representing approximately 12 percent of the total Nye County population. This decline, coupled with growth in the southern areas of the country, represents a significant decrease from 25 percent in 1985.

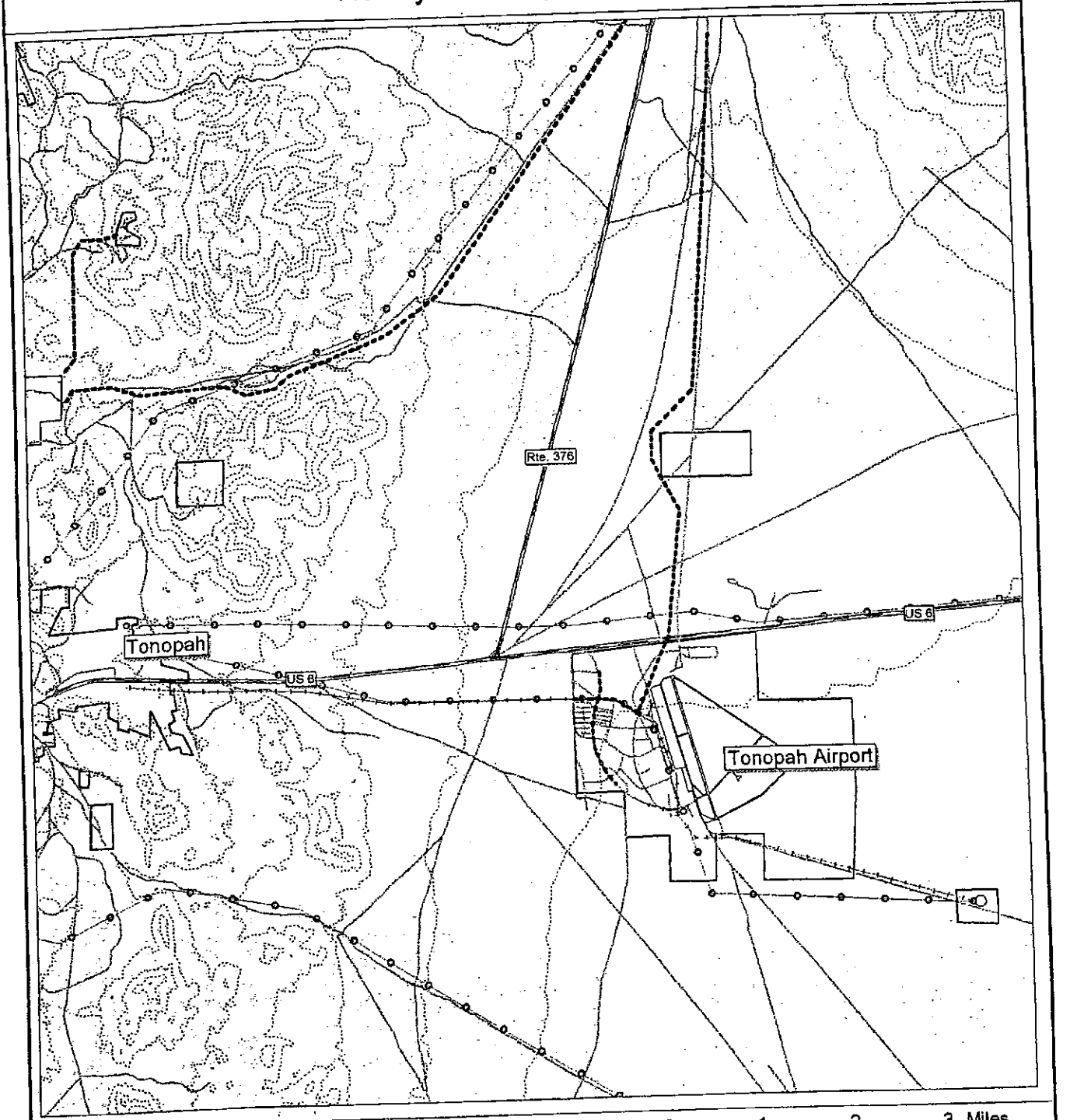
4.4 LAND USE

The area surrounding and including the Tonopah Airport is very rural; the land is sparsely populated with vast areas of open space. The majority of land is administered by the government; however, certain areas are privately owned (see Figure 4-2). These areas are described in further detail below. Tonopah has almost no governmental regulations, which offers few impediments to development for both residential and commercial uses. Tonopah, under Nye County, has established certain principles regarding the subdivision of land in its subdivision and parcel ordinances; however, no community design standards or zoning ordinances currently exists.

4.4.1 Government

The majority of land surrounding Tonopah and the Tonopah Airport is owned and administered by the BLM. However, the BLM Tonopah Resource Management Plan (TRMP) has recently been completed, which identifies several sections of land around the airport as available for potential withdrawal. These sections are listed in Table 4-1 and are shown on Figure 4-2.

Vicinity of Tonopah Airport



Legend
- Radio Towers
- Power Transmission Lines
- Water
- Telephone

Land Use
- County/Private Land
- Public Land (BLM Administered)

N

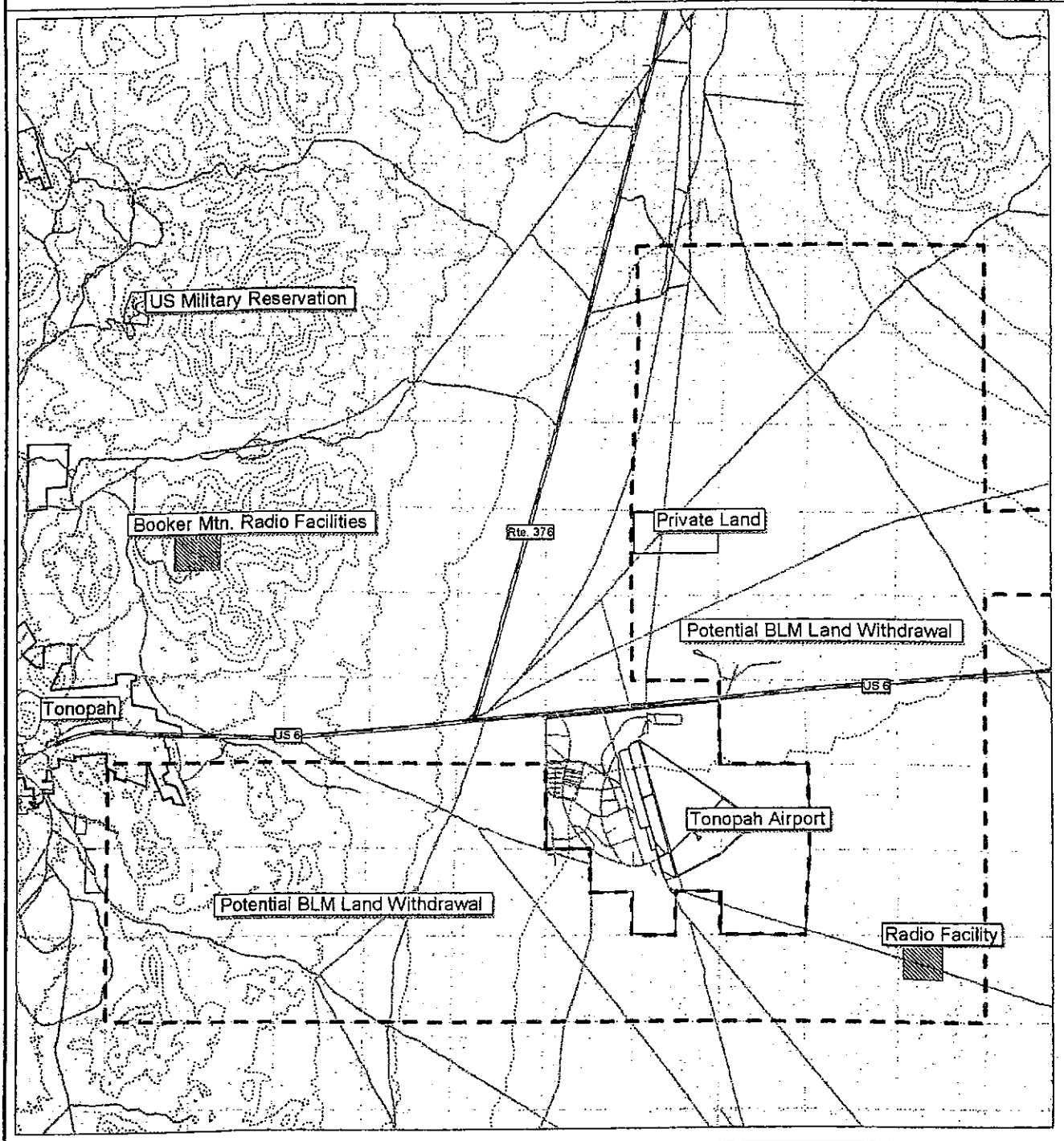
1 0 1 2 3 Miles

1 0 1 2 3 4 5 Kilometers

Projection: Universal Transverse Mercator, Zone 11
North American Datum 1983

Figure 4-1

Land Use Ownership



Legend

Potential BLM Land Withdrawal

Land Use

- County/Private Lands
- BLM - Open/Grazing
- Radio and Air Facility
- Military Reservation
- Federal Agency Protected
- Miscellaneous

N

1 0 1 2 3 Miles

1 0 1 2 3 4 5 Kilometers

Projection: Universal Transverse Mercator, Zone 11
North American Datum 1983

Figure 4-2

Table 4-1
Potential BLM Land Withdrawal Parcels

Township/Range (T/R)	*Sections*
T3N, R43E	None
T3N, R44E	3-10, 15-24, 27-30, 32-34 (all or part of 25 Sections)
T2N, R44E	3-4, 9-10, 15-18 , all or part of 8 Sections, not including Section 7 (the non-inclusion of SE 1/4 of Section 7 is thought to be an oversight and would likely be considered in any withdrawal proposal)
T2N, R43E	2-18 (all or part of 17 Sections)

Note: Private land is not included for disposal.
Source: BLM, 1997.

The town of Tonopah and the Tonopah Airport are administered and managed by Nye County. In addition, the county also owns the land at the sewage treatment plant, which is located adjacent to the airport on the south end.

Several parcels in the area have been withdrawn to the FAA for communication facilities. One parcel is located at Booker Mountain (T3N, R43E, in a portion of Sections 19 and 20); another parcel is located southeast of Tonopah Airport (T2N, R44E, in the northwest portion of Section 15).

4.4.2 Commercial

Many commercial uses exist within the town of Tonopah; however, there is no inventory of the amount of land in this category. The Nye County Commission created the Tonopah Aeronautical Development Park in early 1997. The Park covers all land owned by the County including 550 acres on the east side of the airport (Parcel No. 1) and approximately 975 acres on the west side (Parcel No. 2)(Nye County Economic Development Authority, 1997). Although the land in the park is owned by the county, several areas have been approved for commercial lease.

4.4.3 Private

Private lands within the vicinity of the airport consist of residential, commercial, and industrial uses, largely but not exclusively, within the town boundaries. There is no inventory of the amount of land in each land use category because of the absence of mechanisms to regulate land use.

The only parcel of privately-owned land in the vicinity of the Tonopah Airport is located north of the airport, in T2N, R44E, in the northern half of Section 19.

4.5 Environmental Issues

4.5.1 Geology, Soils, and Seismicity

Geology and Soils

Tonopah is located in the Western Basin and Range Geomorphic Province, in the west-central area of the Ralston Valley. This region consists of tall north-south mountain ranges, rising upward several thousand feet. The Ralston Valley

contains sedimentary and igneous rocks developed in the Quarternary Age.

Soils in the area primarily consist of dry silty sands and gravely silt-sand mixtures. Water erosion is a normal occurrence throughout the area. These areas, due to the lack of a natural occurring plant canopy, soil texture, and slope, exhibit large volumes of soil erosion and low soil development characteristics (U.S. Department of the Interior, 1994).

The BLM TRMP and Final Environmental Impact Statement (FEIS) classifies the area in the immediate vicinity of the airport as having a low potential for locatable minerals. However, the greater Tonopah area still ranks high in mineral exploration and development for Nevada. Activities range from large exploration companies performing numerous drilling programs to small operations and prospectors conducting periodic explorations. There are currently no mineral leasing restrictions in the vicinity.

Seismic Hazards

The area surrounding and including Tonopah is located in Seismic Zone 3, as identified in the Uniform Building Code (UBC) of 1994. The Tonopah Airport is free of any unknown surface faults. All faults in the surrounding mountain ranges are considered inactive because they do not cut through the alluvium.

4.5.2 Hydrology, Water Quality, and Flood Zones

Surface Water

The area surrounding and including Tonopah can be characterized as a desert; therefore, surface water resources are minimal. The absence of adequate perennial surface water is a limiting factor for development. The Tonopah Airport is within the Ralston Watershed Area (TRMP and FEIS). A letter has been prepared for the U.S. Army Corps of Engineers (USACOE) to determine if the washes within the airport are considered "Waters of the U.S." If this determination is made, then Section 404 permits may be required from the USACOE as part of any improvements to property within potential washes.

Groundwater

Water for public use is provided by Tonopah Public Utilities from wells located in Ralston Valley approximately 8 miles north of the Tonopah Airport.

The Ralston Valley groundwater basin has been classified by the State of Nevada as a "designated basin." Such a classification means the Nevada State Engineer has determined that the amount of groundwater associated with water rights exceeds the estimated perennial yield of the basin. Under Nevada statues, the State Engineer is allowed to designate water uses in areas where the groundwater is being depleted or is at risk of depletion. This designation, however, does not prevent the owners or purchasers of water rights from using or developing these rights. Nor does it currently prevent the development of a single-user residential well. However, it would require new users to purchase existing water rights (Nye County Board of Commissioners, 1994).

Flood Hazards

Several areas within the vicinity of the Tonopah Airport have been designated flood hazard areas, which are subject to periodic inundation. Nye County has developed a Flood Damage Prevention Ordinance (1993) to avoid, minimize, and/or mitigate damage or destruction due to flooding. The ordinance identifies potential flood hazard areas; restricts or prohibits uses that are dangerous to health, safety, and property due to water or erosion hazards; requires that uses vulnerable to floods be protected against flood damage; controls the alternation of natural flood plains, stream channels, and natural protective barriers; controls filling, grading, dredging, and other development

that may increase flood damage; and prevents or regulates the construction of flood barriers that will unnaturally divert flood waters to other areas.

The majority of land surrounding the Tonopah Airport is designated as "Zone X" and is determined to be outside the 500-year floodplain. Several areas, however, have been designated as "Zone A," which are within the 100-year flood plain, but for which no base flood elevations have been determined (FEMA, 1996).

4.5.3 Biological Resources

Vegetation and Wildlife

The Tonopah Airport is situated in the Great Basin region. Vegetation in this area is characterized by salt desert shrub, consisting primarily of greasewood, salt grasses, forbs, Indian rice grass, buckwheat, and Russian thistle.

The TRMP and FEIS places the Tonopah Airport in the Salt Desert Shrub area. This is the most dominant vegetation type (56 percent) in the Resource Area. Within the Tonopah area, the Salt Desert Shrub range produces fair to good resources for livestock during the winter. However, it is poor during the spring, summer, and fall. This vegetation type has the potential to subside big game species. The grazing allotments around the Tonopah Airport are part of the Ralston Allotment. These allotments are licensed for cattle, sheep, or horses with seasonal use, livestock numbers, and grazing management systems.

The occurrence of wildfires within the Tonopah area is generally low. The TRMP and FEIS classifies the area to be in Fire Management Zone 1 which is described as having "fuel types [of] annual and perennial grasses, with widely scattered shrubs. This zone is generally situated in the valley floors up to the mid-slopes within the Resource Area."

Typical wildlife in the area includes all desert species of the Great Basin such as the black-tailed jackrabbit, rattlesnake, side-blotched lizard, collard lizard, sage sparrow, and crown sparrow. Species that may use the area as a migratory route include antelope, feral horses, and mountain lions (USACOE, 1995). However, due to the developed nature of the airport, wildlife in the immediate area is likely limited to jackrabbits and snakes. The TRMP and FEIS places the Tonopah Airport within an Antelope Range. It is one of 45 study sites in the area to monitor antelope habitat conditions. The BLM does not include the Tonopah Airport in an area of critical environmental concern or in a wilderness study area.

Threatened and Endangered Species.

The Tonopah Airport and surrounding area is not known to contain any Candidate or Listed Species as classified under the Endangered Species Act of 1973. The BLM, Tonopah Field Station, has listed plant and animal species that may be present in the greater Tonopah Resource Area. Although there are a number of species listed as BLM Sensitive, only those identified by the BLM as possibly existing within the general vicinity of the Tonopah Airport are listed in Table 4-2.

Table 4-2
Sensitive, Candidate, Threatened, and Endangered Species Potentially Occurring in the Tonopah Airport Vicinity

Type	*Common Name*	*Scientific Name*	*Status*
Plants	Eastwood milkweed	Asclepias eastwoodiana	BLM Sensitive
Mammals	Small-footed myotis	Myotis ciliolabrum	BLM Sensitive
	Pale Townsend's big-eared bat	Plecotus townsendii pallescens	BLM Sensitive
Birds	Western burrowing owl	Athene cunicularia hypugea	BLM Sensitive

Source: BLM, Tonopah Field Station 1997.

Since no Candidate or Listed Species are known to be present in the area, improvements to the Tonopah Airport are not anticipated to cause significant impacts upon these biological conditions. The U.S. Fish and wildlife Service (USFWS) has also listed species of concern for the Tonopah Airport (Table 4-3); many species listed by the USFWS are also species of concern to the BLM. According to the USFWS, no endangered, proposed, or candidate species are known to occur in the area.

Table 4-3
Species of Concern that May Exist in the Vicinity of the Tonopah Airport

Species	*Common Name*	*Scientific Name*
Mammals	Spotted bat	Euderma maculatum
	Small-footed myotis	Myotis ciliolabrum
	Long-eared myotis	Myotis evotis
	Fringed myotis	Myotis thysanodes
	Long-legged myotis	Myotis volans
	Yuma myotis	Myotis yumanensis
	Pale Townsend's big-eared bat	Corynorhinus townsendii pallescens
Birds	Western burrowing owl	Athene cunicularia hypugea
Plants	Nevada dune penstemon	Penstemon arenarius
	Nye pincushion	Sclerocactus nyensis

Source: United States Fish and Wildlife Service 1997.

An inquiry is pending from the State of Nevada to determine if there are any species of concern at the state level. Once received, this information will be incorporated into later submittals. This information was not available at the time of publication, but is expected to be similar to federal concerns.

4.5.4 Air Quality

Air quality in a given location is described by concentrations of pollutants in the atmosphere, expressed in units of parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). Air quality is determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and prevailing meteorological conditions. The importance of a pollutant concentration is determined by comparison with federal and/or state air quality standards. These standards represent the maximum allowable concentrations of various pollutants necessary to protect the public health and welfare with a reasonable margin of safety.

National Ambient Air Quality Standards (NAAQS) are federal standards established by the U.S. Environmental Protection Agency (USEPA). NAAQS are defined as the maximum pollutant concentrations that may not be exceeded more than once per year, except annual standards, which may never be exceeded. These standards include concentrations for carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter less than 10 microns in diameter (PM_{10}), ozone (O_3), and lead (Pb).

The Clean Air Act Amendments of 1990 place the responsibility of NAAQS compliance on the states. The USEPA requires each state to prepare a State Implementation Plan (SIP) to outline goals, strategies, schedules, and enforcement actions for compliance with NAAQS. Areas of the state not in compliance with pollutant standards can be declared "nonattainment areas" by the USEPA. The Tonopah region has been designated as being in attainment (meeting air quality standards), and is managed to prevent significant deterioration (U.S. Department of the Interior, 1994). NAAQS air quality standards are shown in Table 4-4.

4.5.5 Conservation and Recreation Areas

Given the vast amount of public land within the vicinity of Tonopah, recreational opportunities are abundant. Recreational opportunities include hiking, camping, trail riding, hunting, and fishing. In addition, the area contains many cultural resources, including ghost towns, mining districts, Native American sites, and other areas of historic or archaeological interest. Recreational areas include the Toiyabe National Forest to the north; Lunar Crater, Railroad Valley Wildlife Management Area, and Humboldt National Forest to the east; and National Wildhorse Management Area to the south. Motorcycle and 4x4 trail explorations are permitted in many areas.

The TRMP and FEIS classify the visual resource characteristics around the airport to be Class 4, which encourages compatibility with the surrounding landscape. Within this classification, "[c]ontrasts may attract attention and be a dominant feature of the landscape in terms of scale; however, the change should repeat the basic elements (form, line, color, and texture) inherent in the characteristic landscape."

4.5.6 Cultural Resources

As described in Section 3.3.1, the area surrounding Tonopah has been inhabited for at least one thousand years and contains numerous and diverse cultural sites. Many sites range in age from Late Pleistocene to historic times, and contain vast amounts of information concerning the prehistory and history of the area. The majority of cultural inventories performed in the area have been project specific; therefore, many areas have not been reviewed for cultural sites. Because a representative sample of the region has not been systematically inventoried as a basis for planning, little is known about the density and distribution of cultural

Table 4-4
Ambient Air Quality Standards

		Nevada Standards[a]	National Standards[b]	
Pollutant	*Average Time*	*Concentration*	*Primary*[c,d]	*Secondary*[c,e]
Ozone	1 hour	235 µg/m^3 [f] (0.12 ppm) [g]	235 µg/m^3 (0.12 ppm)	Same as primary
Oxone-Lake Tahoe Basin, #90	1 hour	195 µg/m^3 (0.10 ppm)	None	None
Carbon monoxide less than 5,000 ft above mean sea level	8 hours	10,000 µg/m^3 (9.0 ppm)	None	Same as primary
at or greater than 5,000 ft. above mean sea level		6,870 µg/m^3 (6.0 ppm)	10 mg/m^3 (9.0 ppm)	
at any elevation	1 hour	40,000 µg/m^3 (35 ppm)	40 mg/m^3 (35 ppm)	
Nitrogen dioxide	Annual arithmetic mean	100 µg/m^3 (0.05 ppm)	100 µg/m^3 (0.05 ppm)	Same as primary
Sulfur dioxide	Annual arithmetic mean	80 µg/m^3 (0.03 ppm)	80 µg/m^3 (0.03 ppm)	Same as primary
	24 hours	365 µg/m^3 (0.14 ppm)	365 µg/m^3 (0.14 ppm)	1,300 µg/m^3 (0.50)
	3 hours	1,300 µg/m^3 (0.5 ppm)	None	Same as primary
(Suspended) particulate matter as PM	Annual (geometric) arithmetic mean	(75) 50 µg/m^3	(75) 50 µg/m^3	Same as primary
	24 hours	150 µg/m^3	(260) 150 µg/m^3	(150 µg/m^3)
Lead (Pb)	Quarterly arithmetic mean	1.5 µg/m^3	1.5 µg/m^3	Same as primary
Visibility [h]	Observation	Insufficient amount to reduce the prevailing visibility to less than 30 miles when humidity is less than 70 percent	There is no national standard for visibility	There is no national standard for visibility
Hydrogen sulfide [i]	1 hour	112 µg/m^3 (0.08 ppm)	There is no national standard for visibility	There is no national standard for visibility

[a] These standards must not be exceeded in areas where the general public has access.

[b] These standards, other than for ozone and those based on annual averages, must not be exceeded more than once per year. The ozone standard is attained when the expected number of days per calendar year with a maximum hourly average concentration above the standard is equal to or less than one.

[c] Concentration is expressed first in units in which it was adopted and is based on a reference temperature of 25° C and a reference pressure of 760 millimeter (mm) of mercury. All measurements of air quality must

be corrected to a reference temperature of 25° C and a reference pressure of 760 mm of mercury (1,013.2 millibars); parts per million (ppm) in this table refers to ppm by volume or micromoles of pollutant per mole of gas.

d National primary standards are the levels of air quality necessary, with an adequate margin of safety, to protect the public health.

e National secondary standards are the levels of air quality necessary to protect the public from any known or anticipated adverse effects of a pollutant.

f Micrograms per cubic meter.

g Parts per million by volume or micromoles per mole of gas.

h For the purposes of this section, prevailing visibility means the greatest visibility that is attained or surpassed around at least half the horizon circle, but not necessarily in continuous sectors.

i The ambient air quality standard for hydrogen sulfide does not include naturally occurring background concentrations.

Note: All values are corrected to reference conditions. These standards of quality for ambient air are minimum goals, and it is the intent of the State Environmental Commission to protect the existing quality of Nevada's air to the extent that it is economically and technically feasible. (Environmental Commission Air Quality Reg. §§ 12.1-12.1.6, eff. 11/7/75; A and renumbered as § 12.1, 12/4/76; A 1215/77; 8/28/79; §§ 12.2-12.4, eff. 11/7/75; 12.5, eff. 12/4/76; A 8/28/79) (NAC A 10/19/83; 9/5/84; 12/26/91).

Source: NAC, Bureau of National Affairs, 1995

resources except for the site-specific areas that have been reviewed.

A records check was performed by the University of Nevada at Las Vegas for previously recorded cultural resources sites and archaeological surveys conducted near the Tonopah Airport. Four sites were identified within the Tonopah areas; none of these were located within the airport boundaries. A review of National Register listings found that the Tonopah historic district and several individual properties were listed within a Multiple Resource Area (USACOE 1995).

Another known historic resource in the area is the Tonopah-Manhattan Stage Coach Route (1905-1910), located approximately one mile north of the Tonopah Airport adjacent to SR 376 as shown in Figure 4-3.

4.6 TRANSPORTATION AND CIRCULATION

Transportation in Tonopah is almost exclusively dependent on vehicular traffic (see Figure 4-3 for roads in the vicinity of the Tonopah Airport). Private vehicles are the primary mode of transportation; there is no local commercial air, bus, or rail service. Roads and highways are critical to commerce and industry as well as growth, development, and the general quality of life. Because of the great distance between communities, this lack of transportation options limits commerce and economic development (Nye County Board of Commissioners, 1994).

County road maintenance is provided through the Nye County Department of Public Works. The department is responsible for road construction, management, maintenance, and repair. The county system includes paved and unpaved roads in the town of Tonopah, as well as in the areas outside of

town. Average daily traffic counts (ADT)were gathered from the Nevada Department of Transportation (NDOT). Data from selected 1996 traffic counts are compared to previous years in Table 4-5. The results reflect general economic trends in the area, with increases from 1975 to the mid-1980s, but a decrease in volumes since that time.

Table 4-5
Average Daily Traffic in Tonopah, 1975-1996

Location	*1975*	*1980*	*1984*	*1996*
US 6, .25 miles east of US 95	1,130	1,530	2,305	2,000
US 6, .25 miles west of SR 376	580	1,045	1,210	1,150
US 6, .25 miles east of SR 376	360	730	1,365	635
US 6, 4.0 miles east of SR 376	210	355	725	460

Source: State of Nevada Department of Transportation 1997.

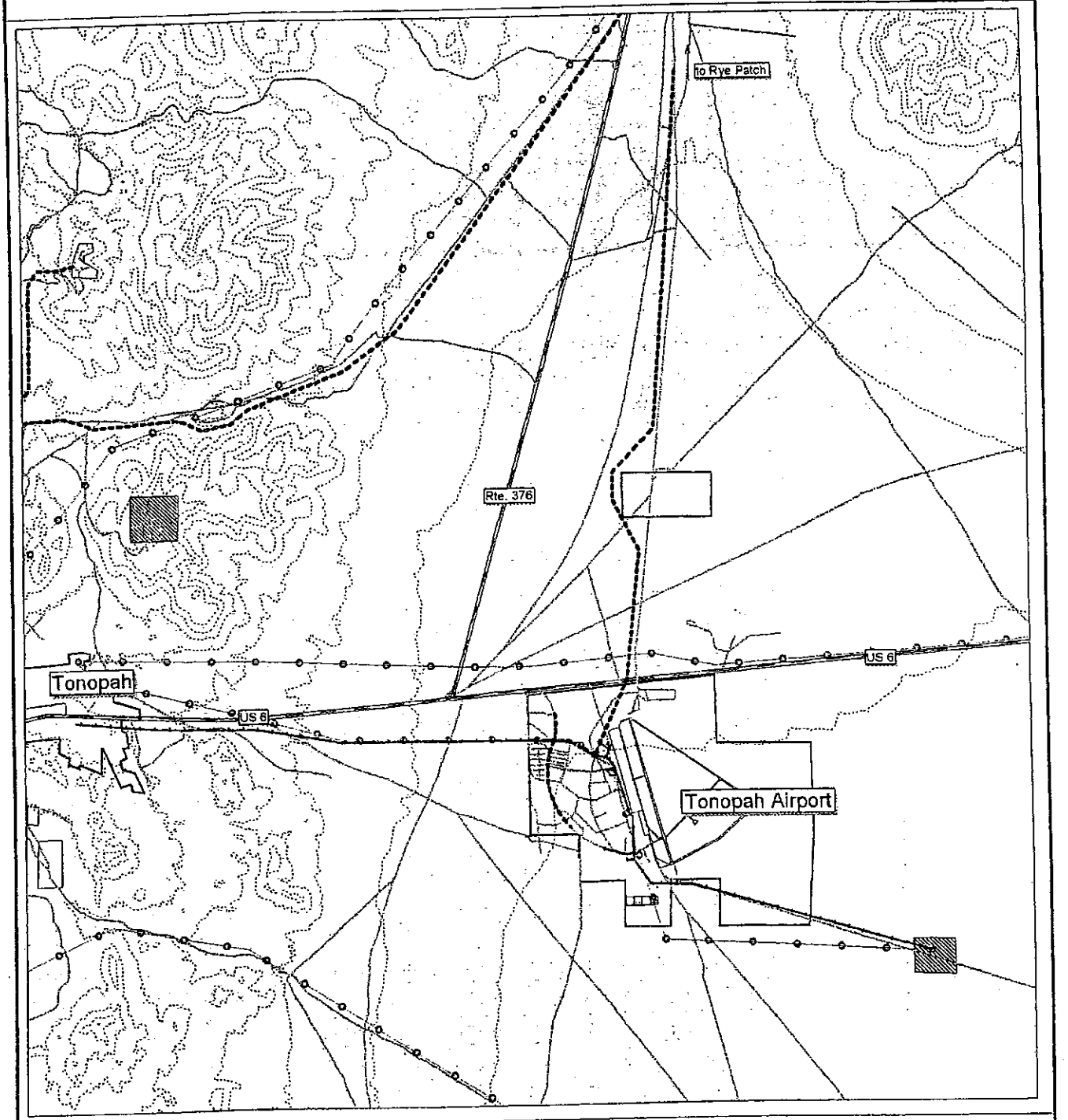
4.7 UTILITIES AND TELECOMMUNICATIONS

As discussed in Section 4.5.2, water for public use is provided by Tonopah Public Utilities from wells located in the Ralston Valley, approximately 8 miles north the airport. These wells provide water for the town of Tonopah and the Tonopah Airport. The water line for the airport enters at the east side of the north gate. See Figure 4-4 for utilities in the vicinity of the airport.

Electrical service to the airport is provided by Sierra Pacific Power. Although a 60 kilovolt (KV) transmission line runs across the northern edge of the airport along U.S. Highway 6, and separate primary service line from the town enters the property at the western edge. The line meets a distribution point near the boundary, where it becomes part of a distribution system servicing the entire western side of the airport, including the FAA/Fixed Base Operator (FBO) buildings, refinery, water storage area, the sand and gravel operation, and the residential area. The power line exits the airport property at the sewage treatment ponds before turning east to the VORTAC facility. There is no service to Parcel No. 1, including the race track, which uses on-site generators.

Telecommunication service is supplied by Citizens Telelcom. The airport is served by a buried copper line from Tonopah, running along U.S. Highway 6. There are no fiber optic lines at the site. The telecommunications lines utilize some of the existing telecommunications infrastructure installed by the Army Air Base during World War II.

Utilities and Telecommunications to the Airport



Legend
- Power Transmission Lines
- Water
- Telephone
- Sewage Treatment Ponds

Roads
- Major
- Minor

N

1 0 1 2 Miles

2 0 2 4 Kilometers

Projection: Universal Transverse Mercator, Zone 11
North American Datum 1983

Figure 4-4

SECTION 5.0
EXISTING CONDITIONS

5.1 SITE DESCRIPTION

The Tonopah Aeronautics and Technology Park will be located at the Tonopah Airport at the north end of the Nevada Science and Technology Corridor. The Tonopah Airport consists of about 3,700 acres of land located approximately 7 miles east of the town of Tonopah. (See Figure 5-1). The airport is comprised of three parcels (Parcels No. 1, 2, and 3). In addition, Parcel No. 4, which is located south of the airport and is owned by Nye County, consists of approximately 156 acres. Parcel No. 1, located on the northeast side of the airport, encompasses 550 acres of land. Parcel No. 2 consists of about 975 acres within the west side of the airport, west of the airfield and the aircraft parking apron area. Parcel No. 3 encompasses 2,171 acres of land and includes the airfield and associated taxiways.

The airport is surrounded by federally-owned land managed by the BLM. Significant portions of this land have been identified by the BLM for potential withdrawal. Nye County should acquire approximately 160 acres of land from the BLM to provide protection and expansion of the arrival end of Runway 33. This property (T2N, R44E, southeast 1/4 of Section 7) is not officially listed for potential withdrawal, but would likely be given serious consideration by the BLM (BLM, 1997).

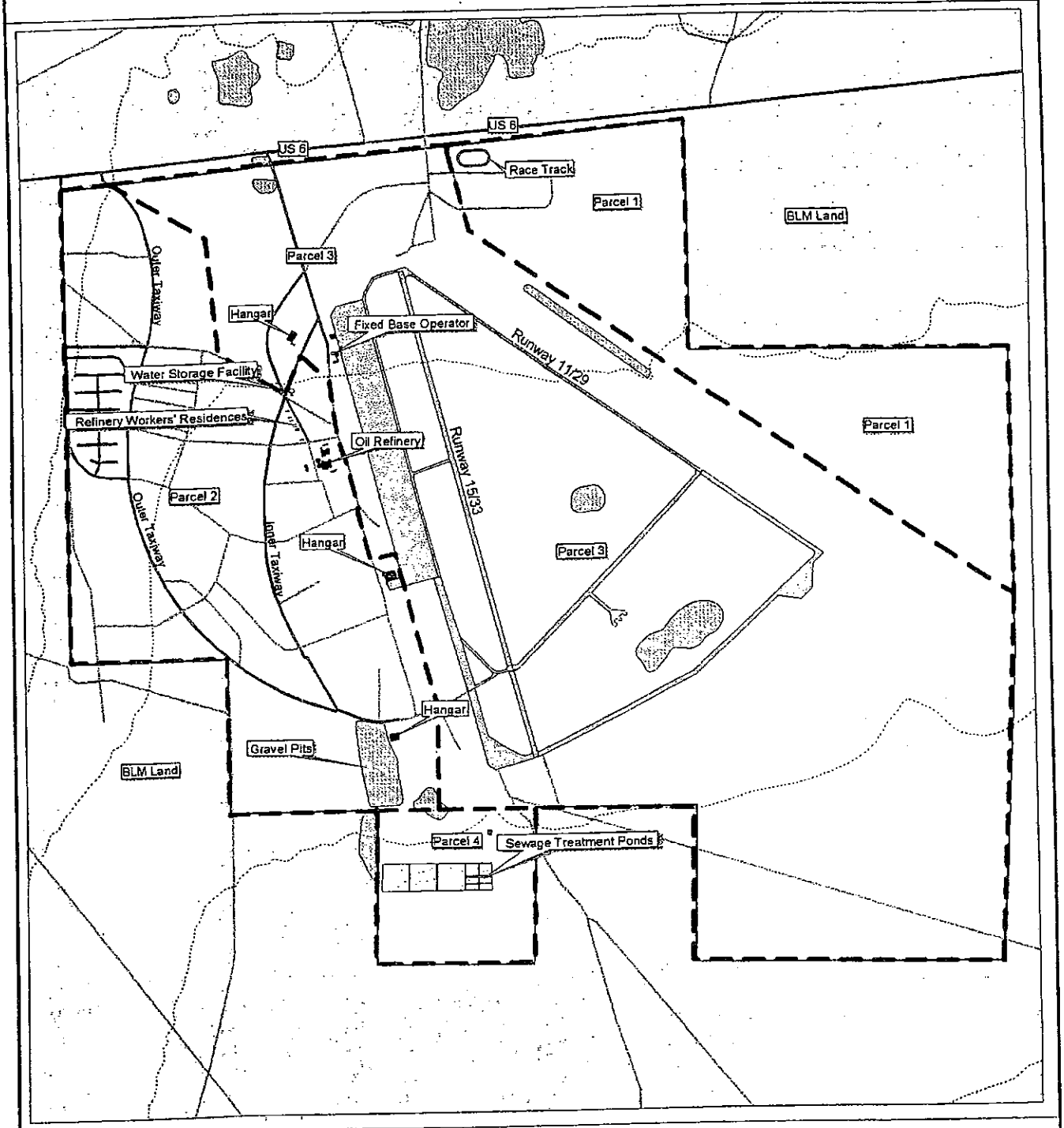
As identified earlier in this report, easements dating from the 1949 Quickclaim Deed exist to the southeast, south, and northwest of the airport. The Deed states on page 7, paragraph (2):

> *"That insofar as it is within its power, the party of the second part [Nye County] shall adequately clear and protect the aerial approaches to the airport by removing, lowering, relocating, marking, lighting or otherwise mitigating existing airport hazards and by preventing the establishment or creation of future airport hazards."*

The Deed does not specifically reference the above requirement to the identified easements. Further, the requirement was written before the advent of turbine-powered aircraft and current approach surface criteria. A search of County records and discussions with the Assessor's Office and the Department of Public Works has not revealed any additional requirements or restrictions upon the easement areas.

Therefore, the County should take action to formally recognize and protect these areas according to the criteria set forth in this document. This should take place before any potential withdrawals take place with the BLM. The purpose of the land use controls is to ensure compatibility with current and potential airport operations before any development takes place. The areas identified in the 1949 Quickclaim Deed are adequate to protect the 10,000-foot approach surfaces for both runways. Topics to be addressed should include height and land use restrictions, permission by the airport to generate noise and vibration over the sites, and limitations on activities that produce smoke, dust, or the gathering of birds.

Aeronautics and Technology Park Site Map



Legend
- Parcel Boundaries
- Gravel Pits
- Sewage Treatment Ponds

Roads
- Paved
- Unpaved

N

0.5 0 0.5 1 Miles

0.5 0 0.5 1 Kilometers

Projection: Universal Transverse Mercator, Zone 11
North American Datum 1983

Figure 5-1

5.2 REAL ESTATE SUMMARY

5.2.1 Parcels

In 1949, Nye County was issued the Tonopah Army Air Corps Base with a Quickclaim Deed under the Federal Property and Administration Services Act of 1949 and the Surplus Property Act of 1944. The Deed yielded 3,696.22 acres of land along with certain structures, improvements, and equipment. The deed required Nye County to use the land for airport purposes only, giving the FAA authority to approve all lease agreements. The restrictions also required the County to maintain the entire landing area and all buildings, structures, improvements, and equipment for the public. The Quickclaim Deed also transferred to the County three avigation easements covering approximately 4,160 acres to the northwest, southeast, and south of the airport.

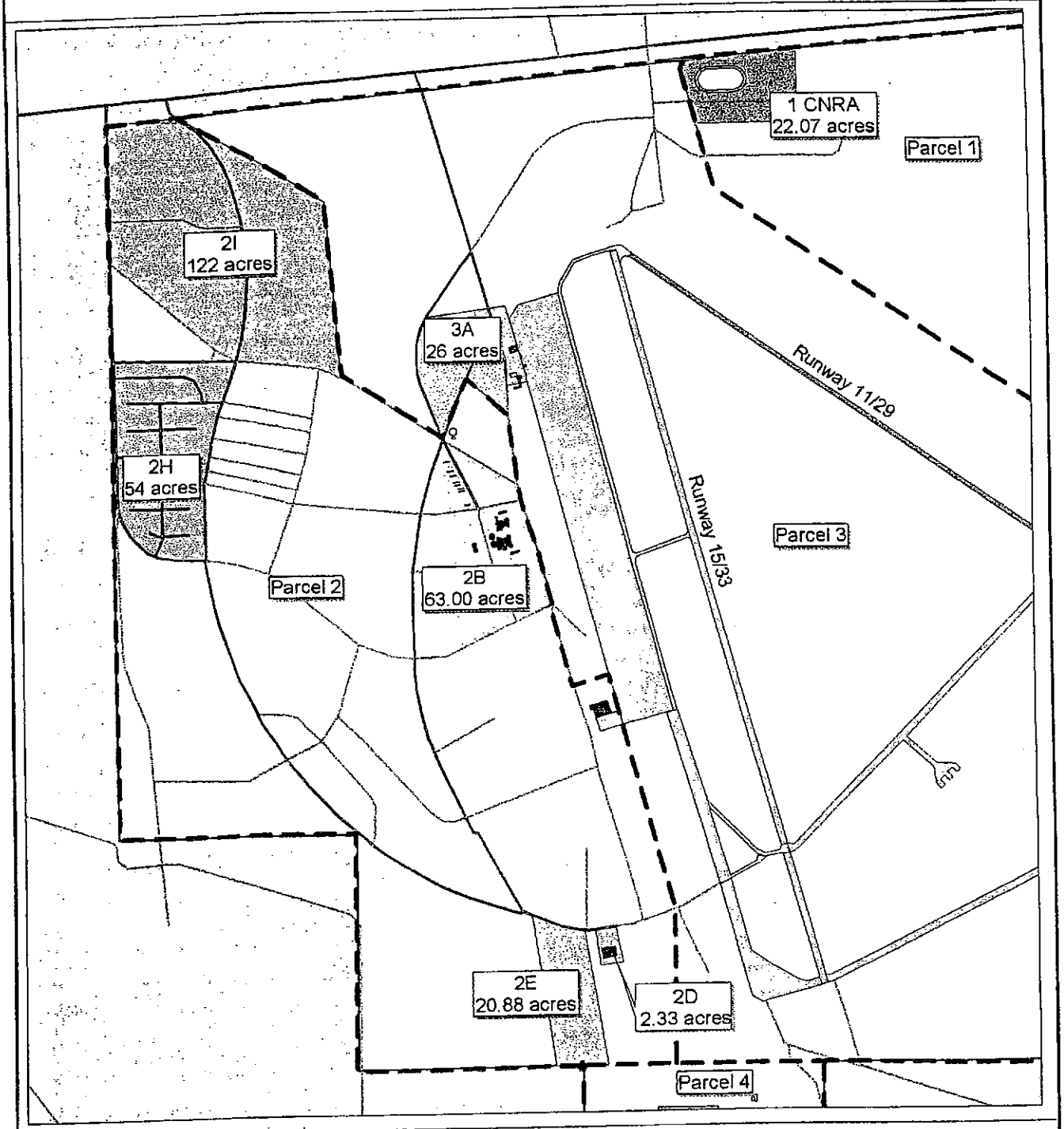
On April 3, 1984, a corrected deed of release was later issued, which permitted the county to enter into long-term lease agreements for Parcels No. 1 and 2. Parcel information is presented in Table 5-1 and illustrated on Figure 5-2.

Table 5-1
Parcel Information at Tonopah Airport

Parcel	*Owner*	*Acreage*
Parcel No. 1	Nye County	550.00
Parcel No. 2	Nye County	975.22
Parcel No. 3	* United States	2,171.00
Subtotal	-	**3,696.22**
Parcel No. 4	Nye County	155.53
Total	-	**3,851.75**

Note: * Ownership in question according to County Assessor
Source: Nye County, County Assessor's Office

Real Estate Summary



Legend

- Parcel Boundaries

Parcel Leases

- 1 CNRA
- 2B
- 2D
- 2E
- 2H
- 2I
- 3A

N

0.2 0 0.2 0.4 Miles

0.2 0 0.2 0.4 0.6 0.8 Kilometers

Projection: Universal Transverse Mercator, Zone 11
North American Datum 1983

Figure 5-2

5.2.2 Existing Leases

Several leases currently exist on Parcels No. 1 and No. 2. Existing lease information is presented in Table 5-2. The location of the leases is shown on Figure 5-2.

Table 5-2
Existing Leases

Assessed Owner	*Lease Area*	*Acres*	*Parcel*	*Uses*
Desert Flying Services, Inc.	Area "A"	* 26.00	No. 3	Fixed Base Operator
Petro Source Corporation	Area "B"	63.00	No. 2	Petroleum refining plant and mobile home park
James Prudden	Area "D"	2.33	No. 2	Aviation storage and warehousing
Tonopah Sand and Gravel, Inc.	Area "E"	20.88	No. 2	Sand and gravel pit
Scott Walker Boudwin, Inc.	Master Lease: Parcel No. 2, excluding Area "B", "D", "E", and "H"	940.08	No. 2	Residential, commercial, industrial, and recreational
Scott Walker Boudwin, Inc.	Area "H"	54.00 (** 14.25)	No. 2	Residential
Frank Scott	Area "I"	122.00 Improvements Only	No. 2	Mobile home park
Central Nevada Racing Association	North Boundary	22.07 Improvements Only	No. 1	Race track

Notes: * Calculated based on Nye County Information Plat.
** Nye County records state size as 14.25 acres, actual size is approximately 54 acres.
Source: Nye County Assessor, 1997.
Nye County - Information Plat Only, Tonopah Airport, July 1979.

Area "A" is held by Mark Peterson, who runs the FBO for the Tonopah Airport, and consists of 26 acres in Parcel No. 3. This lease contains one of the old Army aircraft hangers. Since the purpose of the facility is to provide the Airport with an FBO, there is no fee for this lease.

Area "B" is held by the Petro Source Corporation, consisting of 63 acres in Parcel No. 2. Privileges granted to the facility are petroleum refining and mobile home residences. There is currently no refining performed at the facility. However, the distillation columns are used to separate transmix to gasoline and diesel components. It also serves as a transfer station where trucks transport fuel to various destinations.

Area "D" is held by James Prudden totaling 2.33 acres. This lease also includes one of the three existing Army aircraft hangers. The land is used as an aviation storage and warehousing facility.

Area "E," within Parcel No. 2, is held by Tonopah Sand and Gravel, Inc. This lease contains 20.88 acres. The lease grants privileges to operate a sand and gravel pit.

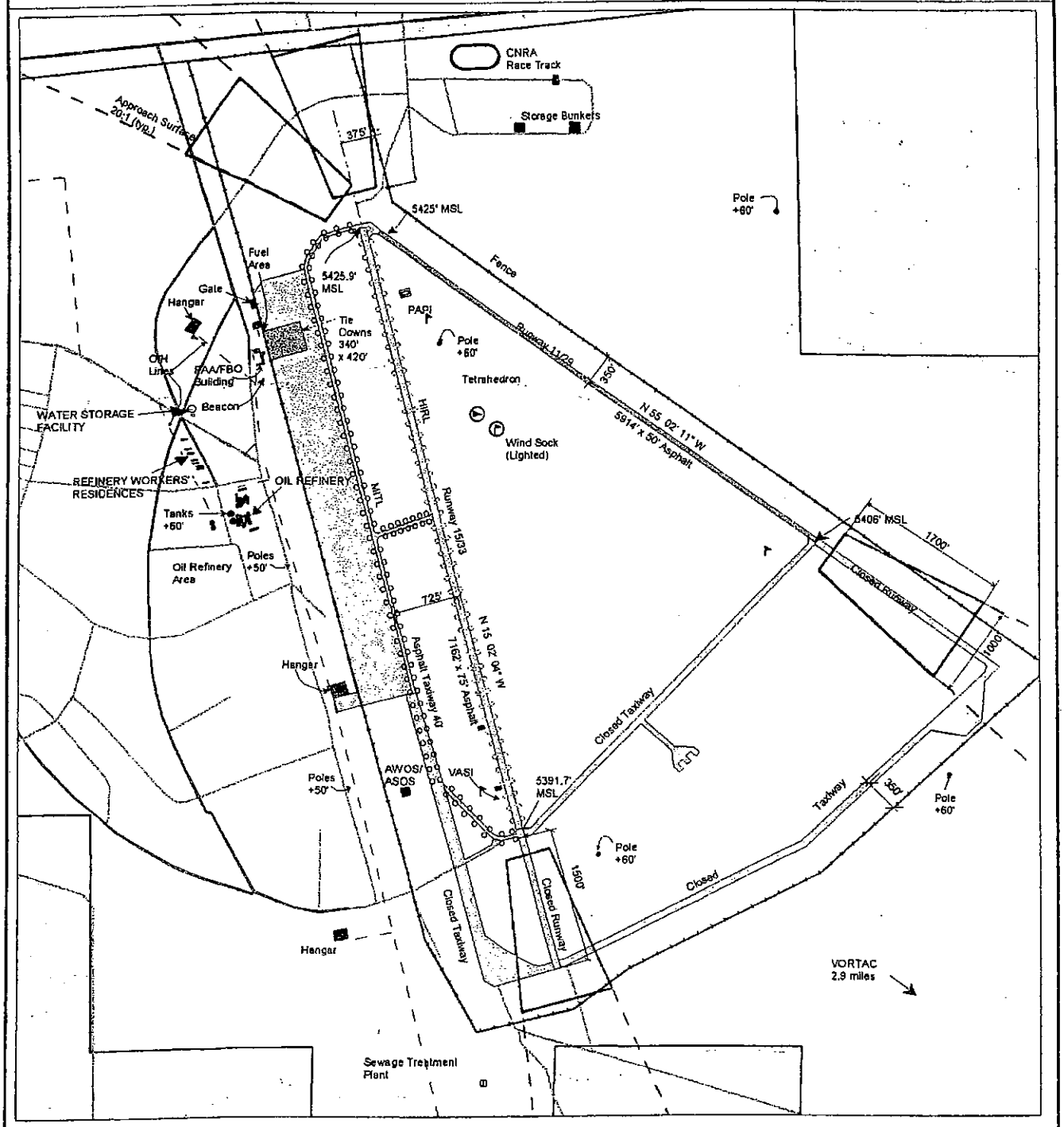
Arthur and Judith Yates leased Area "F" (not shown on figure) to operate a mini-storage facility. The structure was destroyed by a windstorm and the lease was rolled back into the master lease which is occupied by Scott Walker Boudwin, Inc. This lease takes up most of Parcel No. 2 with 940.08 acres excluding lease areas "B," "D," "E," and "H." The last of these leases, Area "H," consists of 14.25 acres along the west border of Parcel No. 2. This area has been divided into residential lots. An additional lease, Area "I," is held by Frank Scott individually. It is an improvements lease for developing a residential mobile home park.

The Central Nevada Racing Association has a lease for improvements on 22.07 acres along the northern boundary of Parcel No. 1, along U.S. Highway 6. Just south of the race track are several old Army ammunition bunkers that are used for storage by the County. No official lease is issued on the bunkers.

5.3 EXISTING AIRPORT ACTIVITIES

Tonopah Airport operations and facilities are shown in Figure 5-3 (see also Table 5-3). Airport operations and open space are the primary land use categories. Other land use categories are industrial, recreation, residential, and storage (see Table 5-4).

Existing Airport Facilities



Legend

- Power Lines
- Fence
- Approach Surfaces
- Runway Protection Zone

Airport Surfaces

- Asphalt
- Concrete

N

1000 0 1000 2000 Feet

500 0 500 1000 Meters

Projection: Universal Transverse Mercator
North American Datum 1983

Figure 5-3

Table 5-3
Tonopah Airport Operations

Item	*Description*
Facility Use	Open to the public
Sectional Chart	Las Vegas
Control Tower	No
ARTCC	Salt Lake City Center
FSS	Reno Flight Service Station (1-800-WX-BRIEF)
NOTAMs Facility	TPH (NOTAM-D service available)
Attendance	Daylight hours
Segmented Circle	Yes
Airspace Analysis	Not analyzed, established prior to 15 May 1959
Lights	Dusk-dawn
Beacon	White-green (lighted land airport)
Landing Fee	None
Airline Operations	Not certified under FAR Part 139
International Operations	Not permitted

Source: FAA Airport Master Record, Form 5010-1, April 1997.

Table 5-4
Land Use Descriptions

Category	*Description*
Airport Operations	Runways, taxiways, parking apron, FAA/FBO facility, runway protection zones
Industrial	Oil refinery, sand and gravel pit, sewage treatment ponds
Storage	Old Army aircraft hangers, old bunkers, surface storage
Residential	Mobile homes, housing units
Recreation	Central Nevada Racing Association
Open Space	No declared use

Source: Ogden Environmental and Energy Services, 1997.

5.3.1 Airport Operations

General Aviation Facilities and Services

Desert Flying Service Inc., a full-service FBO, provides general aviation facilities and services to the Tonopah Airport. Services offered include flight instruction, flight planning, fueling, and maintenance facilities. Desert Flying Service also conducts airframe and power plant repairs within a 54 foot by 75 foot maintenance hanger.

Airport Maintenance is undertaken by Nye County. Conditions are determined by

the FBO who in turn requests maintenance service from county staff.

Federal Aviation Administration

The Tonopah Airport is uncontrolled and has no FAA control tower. However, the Reno Flight Service Station (FSS) provides information on weather, airports, altitudes, routes, and other flight planning data for instrument flight rules (IFR) and visual flight rules (VFR) aircraft (Nevada State Airport System Plan [NSASP] 1995). The Airport Advisory Service broadcasts on the Common Traffic Advisory Frequency (CTAF), allowing pilots to assist one another when the FSS is closed (dusk till dawn). IFR operations use instruments to determine spatial orientation of the aircraft, while the VFR uses visual references to the ground. The Salt Lake City Air Route Traffic Control Center (ARTCC) also assists the Tonopah Airport. The ARTCC, also known as the *Center*, provides air traffic control for arriving and departing aircraft operating under IFR through the Tonopah FSS.

The Tonopah Airport has a control zone with a 5 statute mile radius from the center of the airport and extending outward towards the north and southeast. This control zone is in effect above 14,500 feet MSL. The airport also has a 5-mile radius VFR airspace reservation (NSASP 1995).

Airport Navigational and Landing Aids

Navigational and landing aids at the airport consist of the Tonopah VORTAC located southeast of the airport; a lighted tetrahedron and wind sock near the midpoint of Runway 15-33; a rotating beacon located south of the FAA building; and a 4-box, two-bar visual approach slope indicator (VASI) located on the left of Runway 33. Runway 15 is equipped with a 2-light precision approach position indicator (PAPI), although it is currently inoperable. In addition, high intensity runway lights (HIRL) are located along Runway 15-33 and the parallel taxiway is also lighted with Medium Intensity Runway Lighting (MITL). Currently, Runway 11-29 is not lighted.

Runways

The Tonopah Airport is equipped with two runways (15-33 and 11-29) initially built in the early 1940s by the U.S. Army. Runway 11-29 was closed in 1982 due to poor pavement conditions; however, the runway was re-paved in 1996 and is presently in use (see Table 5-5). For further description of the runways and FAA-projected demands, see the Tonopah Airport Layout Plan, 1998.

Runway 15-33 has a 1,500-foot closed section south of the Runway 33 threshold. The runway was completely reconstructed in 1996 to a design strength of 30,000 pounds Gross Allowable Aircraft Weight; the southern-most 1,500 feet of the runway was not reconstructed. Reconstruction procedures were as follows:

- Removal of top asphalt.
- Pulverization of existing asphaltic concrete and aggregate base (6 inches total).
- New aggregate base rock (Type II, Class B, 1-inch.
- Moisturization and recompaction.
- New asphalt pavement (4 inches).

The ALP recommends that Runway 15-33 be extended to 9,100 feet to accommodate ADG B-II aircraft, the "critical" design aircraft designated by the FAA for this airport. The current runway width is adequate at 75 feet, and paved runway shoulders are not required. An aircraft holding apron and bypass taxiway should be provided at each end of the runway. Blast pads and paved thresholds are not required at this time.

New HIRL should be installed along the runway extension. If a precision or straight-in nonprecision instrument approach is designed and approved by the FAA, precision and nonprecision

Table 5-5
Runway Conditions

Runway 15-33 (Primary Runway)

Dimensions	7162 feet x 75 feet
Surface	Asphalt, in good condition
Runway Edge Lights	Medium Intensity

Item	*Runway 15*	*Runway 33*
Traffic Pattern	Left	Left
Runway Heading	150 magnetic, 165 true	330 magnetic, 345 true
Markings	Basic	Basic
Markings Condition	Fair	Fair
Latitude	38-04-03.119N	38-02-54.757N
Longitude	117-05-33.803W	117-05-10.585W
Elevation	5425.9 feet	5391.7 feet
Visual Glide Path Angle	3.00 degrees	3.00 degrees
Visual Slope Indicator	2-lt PAPI on left (inoperable)	4-box VASI on left
RVR Equipment	None	None
Runway End Identifier	No	No
Centerline Lights	No	No
Displaced Threshold:	No	No
Touchdown Point	Yes	Yes
Touchdown Elevation	5425.9 feet	5406.2 feet
Obstructions	None	None

Runway 11-29 (Crosswind Runway)

Dimensions	5400 feet x 50 feet
Surface	Asphalt, in good condition

Item	*Runway 11*	*Runway 29*
Traffic Pattern	Left	Left
Runway Heading	110 magnetic, 125 true	290 magnetic, 305 true
Markings	Numbers only	Numbers only
Latitude	38-04-01.805N	38-03-31.21N
Longitude	117-05-30.624W	117004-35.29W
Elevation	5425.0 feet	5406.0 feet
Visual Slope Indicator	None	None
RVR Equipment:	None	None
Runway End Identifier Lts	No	No
Centerline Lights	No	No
Displaced Threshold	No	No
Touchdown Point	Yes	Yes
Touchdown Elevation	5425.1 feet	5417.0 feet
Touchdown Lights	No	No
Obstructions	None	None

Source: FAA Airport Master Record, Form 5010-1, April 1997.

instrument markings, as appropriate, should then be painted on Runway 33, which includes distance markings at 1,000 foot intervals from the threshold.

Any increase in aircraft type, visibility minimums, or airplane design group (ADG) rating may require additional runway length, runway width, paved shoulders, blast pads, lighting, and possible runway strengthening.

Runway 11-29 has a 2,300-foot closed area southeast of the Runway 29 threshold. In 1996, the runway was resurfaced to make it operable while Runway 15-33 was reconstructed. Although the officially listed runway length is 5,400 feet, there is a 625-foot improved area at the Runway 11 threshold and a 175-foot improved area at the Runway 29 threshold. Thus, the total improved length is approximately 6,250 feet. The repaving work included the following:

- Coverage of existing runway with slurry seal.
- Overlaid runway with new asphalt pavement (2 inches).

The ALP recommends the continued retention of Runway 11-29. According to local sources, this runway is currently used about 50 percent of the time under favorable weather conditions. The runway should be reconstructed, extended to a length of 7,300 feet, and widened to 75 feet. Graded shoulders should be provided similar to Runway 15-33, but paving is not required. A holding area should be included at each runway end. Blast pads and paved thresholds are not required.

Current evaluations of the runway strength is 30,000 pounds for single-wheel aircraft, 60,000 pounds for dual-wheel, and 77,000 pounds dual-tandem. However, as has already been mentioned, these ratings are in doubt. A Pavement Condition Report should be conducted prior to design to verify and establish the scope of reconstruction. Design strengths should be equivalent to Runway 15-33. Current projections do not justify lighting the runway at this time.

As with Runway 15-33, any increase in aircraft type, visibility minimums, or ADG rating would require additional runway length, runway width, paved shoulders, blast pads, installation of lighting, and possible runway strengthening.

Taxiways and Aprons

In 1982, a portion of the aircraft parking apron across from the FAA/FBO facility was reconstructed with 43 tiedowns. The county owns and leases these spaces, along one of the old wooden hangers, to Desert Flying Service.

The existing taxiway system parallels Runway 15-33. Taxiways linking the south end of both runways are overgrown with vegetation and are in poor condition; currently the taxiways are not in use. In 1981, a full-length, 40-foot wide taxiway was constructed parallel to Runway 15-33, 725 feet from the centerline of the runway. This taxiway has entry/exit points at both ends of the runway. An exit taxiway connecting the runway and parallel taxiway is located near the midpoint of the runway.

The parallel taxiway should be extended to the full length of the runway expansion. An existing closed holding area at the southern end of the taxiway may be reused for Runway 33. The existing width of 40 feet is adequate for projected demand. MITL should be extended when the taxiway is lengthened.

When the runways are extended, the existing outer closed taxiway should be repaved and reopened. This will allow a more efficient use of the runways for current and prospective tenants. The Pavement Condition Report recommended for Runway 11-29 should include this taxiway.

The ultimate design should include an extension of the mid-field taxiway that currently connects the parallel taxiway and Runway 15-33. This extension would run to Runway 11-29. The purpose is to allow a more efficient use of the runways by allowing smaller aircraft to exit Runways 33 and 29 (after landing) without tying up the runways while taxiing. It will not be necessary to light either taxiway until Runway 11-29 is lighted.

Any increase in aircraft type, visibility minimums, or ADG rating would require additional taxiway width and relocation and extension of taxiway lighting.

Flight Patterns

There are four VORTACs in the area that provide the basis for low altitude airway structure. A VORTAC is a very high frequency omni-directional range that provides bearing information to aircraft along with tactical air navigation (TACAN). VORTACs are typically located within range of one another to provide navigational assistance. The Tonopah VORTAC is located approximately two nautical miles (NM) southeast of the airport. Other VORTACs in the region include the Coaldale VORTAC located 35 NM west of the Tonopah VORTAC; the Mina VORTAC, about 36 NM northwest of the Coaldale VORTAC; and the Wilson Creek VORTAC, located approximately 125 NM east of the Tonopah VORTAC (National Oceanic and Atmospheric Administration 1997).

The NSASP has examined en route airspace using the Victor Airway system, which is a system is set forth on VOR/VORTAC navigational aids (see Figure 5-4). The airways are noted on aeronautical charts by a "V" (Victor) and an airway number, for example "V-454." Control of en route airspace over the Tonopah area is handled by the Salt Lake City ARTCC. Airway V-244 connects the Wilson Creek, Tonopah, and Coaldale VORTACs. V-564 runs northwest from the Coaldale to Mina VORTACs. V-105 and V-135 run southeast from the Coaldale VORTAC. Current flight patterns at the Tonopah Airport are shown on Figure 5-5.

Protection Zones

The Part 77 Airspace Plan is a graphic depiction of Federal Aviation Regulations (FAR) Part 77, "Objects Affecting Navigable Airspace," regulatory criterion. The Part 77 Airspace Plan can aid local authorities in determining if proposed development could present a hazard to the airport and obstruct the approach path to a runway end.

The Part 77 Airspace Plan assigns three-dimensional Imaginary Surface areas to each runway. These Imaginary Surfaces emanate from the runway centerline and are dimensioned according the visibility minimums and size of aircraft projected to operate on the runway.

Part 77 Imaginary Surfaces include the Primary Surface, Approach Surface, Transitional Surface, Horizontal Surface, and Conical Surface. Part 77 Imaginary Surfaces are described in the following paragraphs.

Tonopah Airspace Configuration

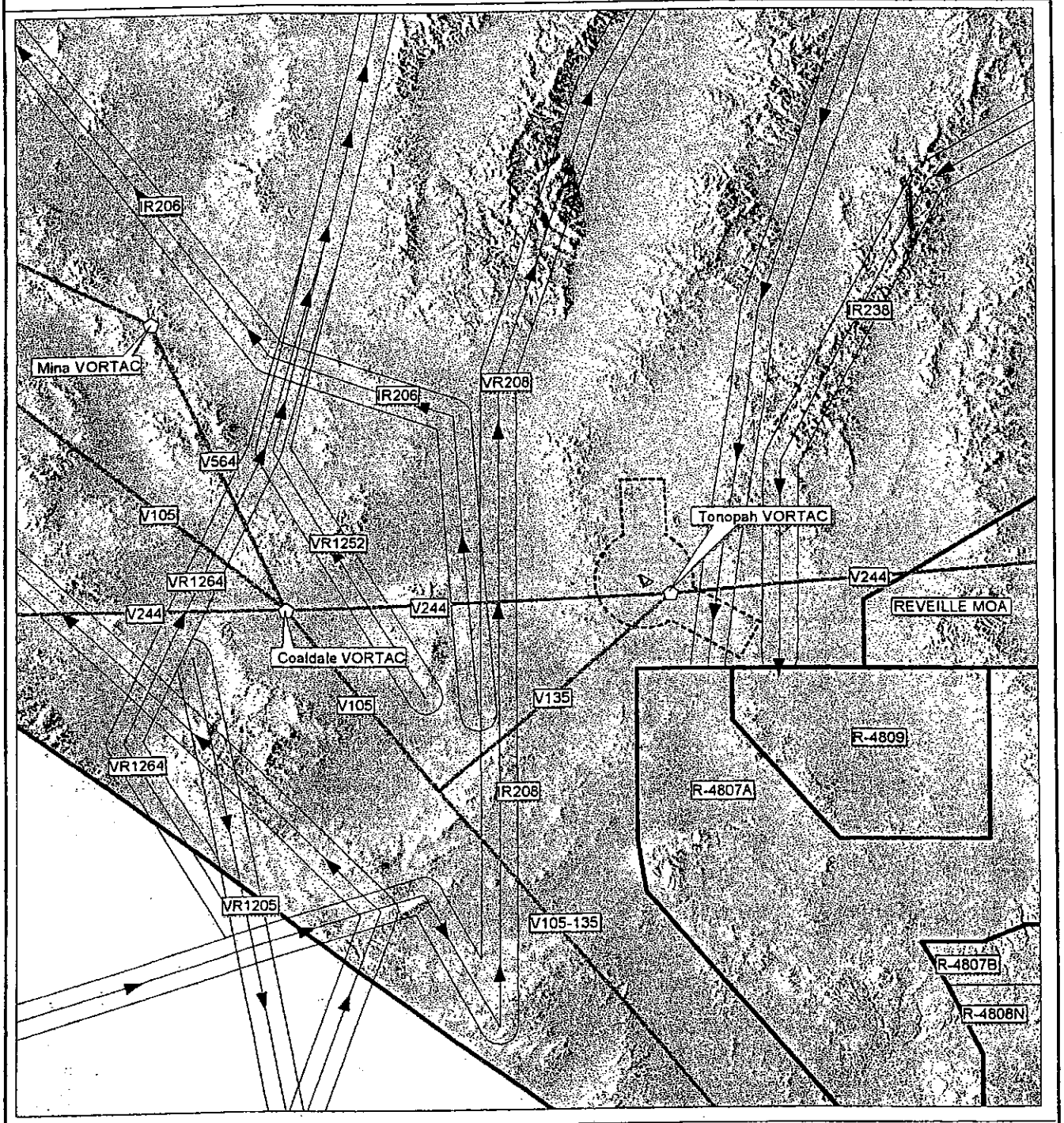
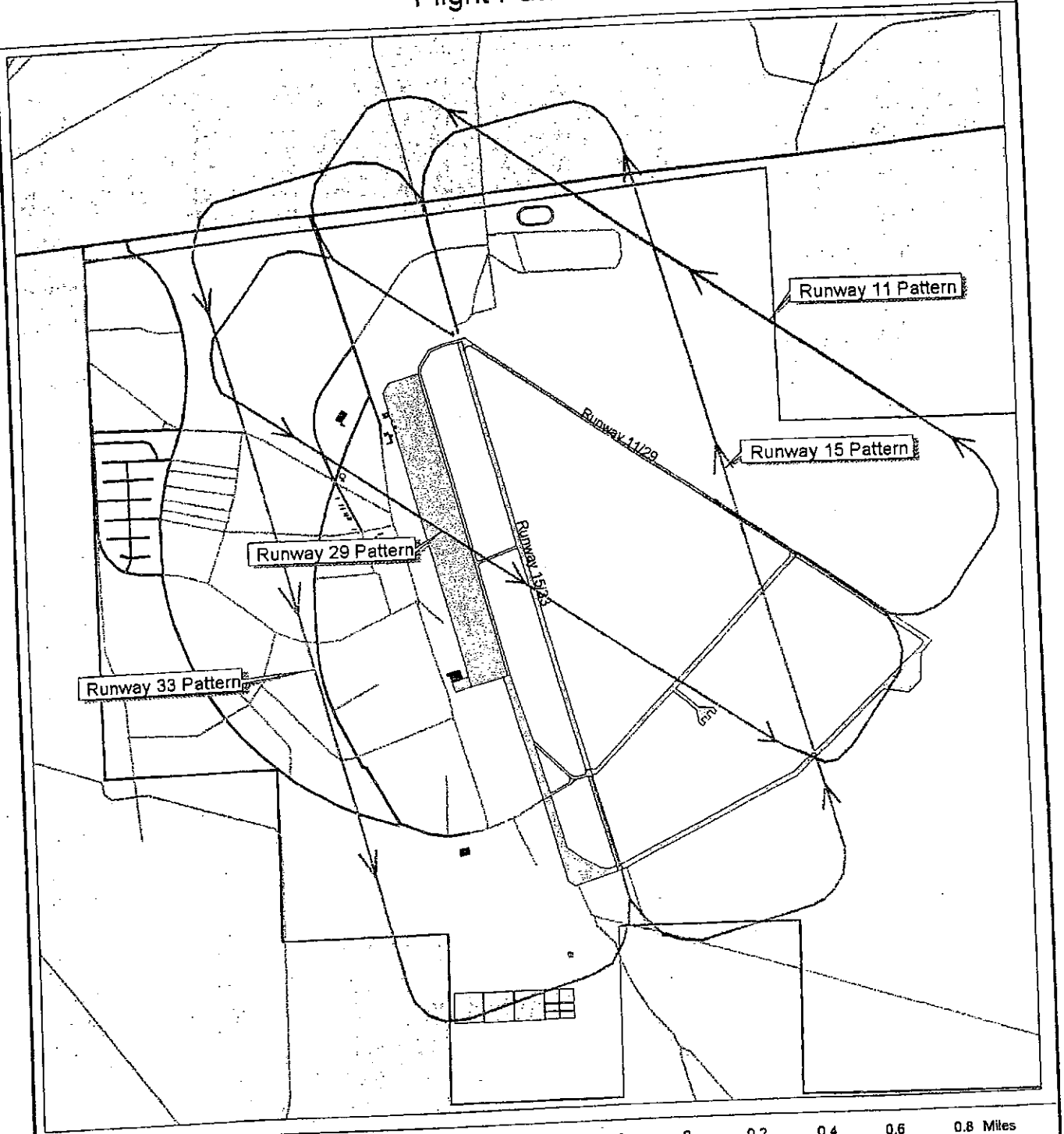


Figure 5-4

Flight Patterns



Legend

Flight Patterns for Runway 11/29

Flight Patterns for Runway 15/33

Roads

Paved

Unpaved

N

0.2 0 0.2 0.4 0.6 0.8 Miles

0.2 0 0.2 0.4 0.6 0.8 Kilometers

Projection: Universal Transverse Mercator, Zone 11
North American Datum 1983

Figure 5-5

Primary Surface

The Primary Surface is an Imaginary Surface longitudinally centered on the runway. The Primary Surface extends 200 feet beyond each runway end and its width is determined by the type of approach established for that runway end (i.e., visual, non-precision, precision). The elevation of any point on the Primary Surface is the same on the elevation along the nearest associated point on the runway centerline. Under Part 77 regulations, primary surfaces for all runways at the Tonopah Airport are 1,000 feet wide.

Situated adjacent to the runway and taxiway system, the Primary Surface must remain clear of unnecessary objects to allow for the unobstructed passage of aircraft. Within the Primary Surface, objects are only permitted if they are no taller than two feet above the ground and if they are constructed on frangible (breakaway) fixtures. The only exception to the two-foot height requirement is for objects whose location is fixed by function. A PAPI system is an example of an object which falls within the category of "fixed by function."

Approach Surface

An Approach Surface is also established for each runway. The upward slope and length of the Approach Surface is determined by the type of approach to the runway end. The Approach Surface is centered longitudinally on the extended runway end and extends upward and outward from each end of the Primary Surface. The inner edge of the approach surface is the same width as the Primary Surface and expands uniformly to a width of:

- 4,000 feet for nonprecision instrument runways; and
- 16,000 feet for precision instrument runways.

The approach surface extends for a distance of:

- 10,000 feet at a slope of 34:1 for all nonprecision instrument runways; and
- 10,000 feet at a slope of 50:1 with an additional 40,000 feet at a slope of 40:1 for all precision instrument runways.

Transitional Surface

Each runway has a Transitional Surface that begins at the outside edge of the Primary Surface at the same elevation as the runway. The Transitional Surface also connects with the Approach Surfaces of each runway. The surface rises at a slope of 7:1 to a height which is 150 feet above the highest runway elevation. At that point, the Transitional Surface is replaced by the Horizontal Surface. The Transitional Surface helps define the location of the Building Restriction Line (BRL).

Horizontal Surface

The Horizontal Surface is established at 150 feet above the highest elevation of the runway surface. Having no slope, the Horizontal Surface connects the Transitional and Approach Surfaces to the Conical Surface at a distance of 10,000 feet from the Primary Surface of each runway.

Conical Surface

The Conical Surface begins at the outer edge of the Horizontal Surface. The Conical Surface then continues for an additional 4,000 feet horizontally at a slope of 20:1. Therefore, at 4,000 feet from the Horizontal Surface, the elevation of the Conical Surface is 350 feet above the highest airport elevation.

Runway Protection Zone Plan

The Runway Protection Zone Plan is a scaled drawing of the Runway Protection Zone (RPZ), Runway Safety Area (RSA), Obstacle Free Zone (OFZ), and Object Free Area (OFA) for each runway end. A plan and profile of each RPZ is shown in

Figure 5-6. The FAA Airport Master Record reports obstructions as categorized by FAR, Part 77, "Objects Affecting Navigable Airspace." FAR Part 77 defines potential obstructions as:

> *"Any object of natural growth, terrain, or permanent or temporary construction or alteration, including equipment or materials used therein, and apparatus of a permanent or temporary character; and alteration of any pavement or temporary existing structure by a change in its height (including appurtenances), or lateral dimensions, including equipment or materials used therein."*

The FAA Airport Master Record reported no obstructions with either runway. The previous ALP recommended an increase in the size of the Clear Zones at the end of the runways, although no official documentation has been found that adopts this recommendation. The recommended size for each runway was an inner width of 1,000 feet, an outer width of 1,750 feet, and a length of 2,500 feet. This was an increase from 500, 800, and 1,000 feet, respectively.

The Quitclaim Deed of 1949 conveying the airport to the County provided for three avigation easements outside the airport boundary. Two of these easements extend approximately two miles south and southeast of the airport and the third easement extends almost two and one-half miles to the north

5.3.2 Industrial

Industrial land uses exist within Parcel No. 2. The Petro Source Corporation, consisting of 63 acres, is a petroleum refining plant, although refining is not currently performed at the facility. Instead, the plant is used for transmix separation and as a transfer station. Land use designations are shown on Figure 5-7.

Tonopah Sand and Gravel, Inc., encompasses about 20.88 acres. The facility operates as a sand and gravel pit.

5.3.3 Storage

There are many storage areas on the airport. Two of the three old Army aviation hangers are used for storage. Also, the old ammunition bunkers in Parcel No. 1 are currently being used by the County for various storage functions. Storage areas are also associated with several of the other leases.

5.3.4 Residential

Residential units exist along the west boundary of Parcel No. 2 within a 14.25 acre housing development initiated by Frank Scott. However, little development has occurred and only a few houses exist.

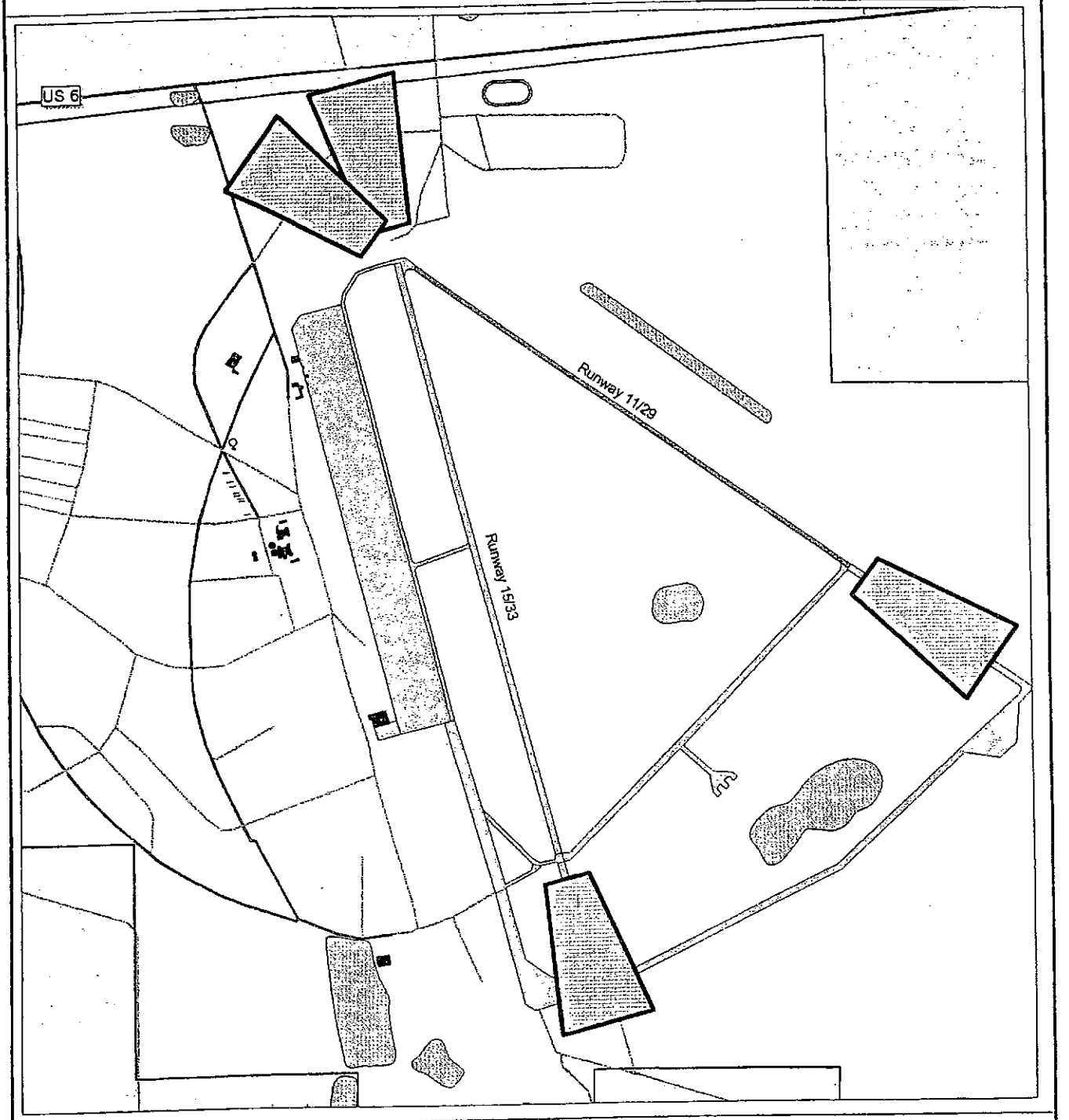
5.3.5 Recreation

Within Parcel No. 1, along the airport's northern boundary, is an amateur automobile race track. This race track is operated by the Central Nevada Racing Association (CNRA).

5.3.6 Open Space/Undeveloped

Because of the small amount of development that has occurred at the airport in recent years, much of the area may be classified as undeveloped or open space. The majority of Parcels No. 1 and 2 may be placed into this classification.

Airport Runway Protection Zones



Legend

Runway Protection Zones

N

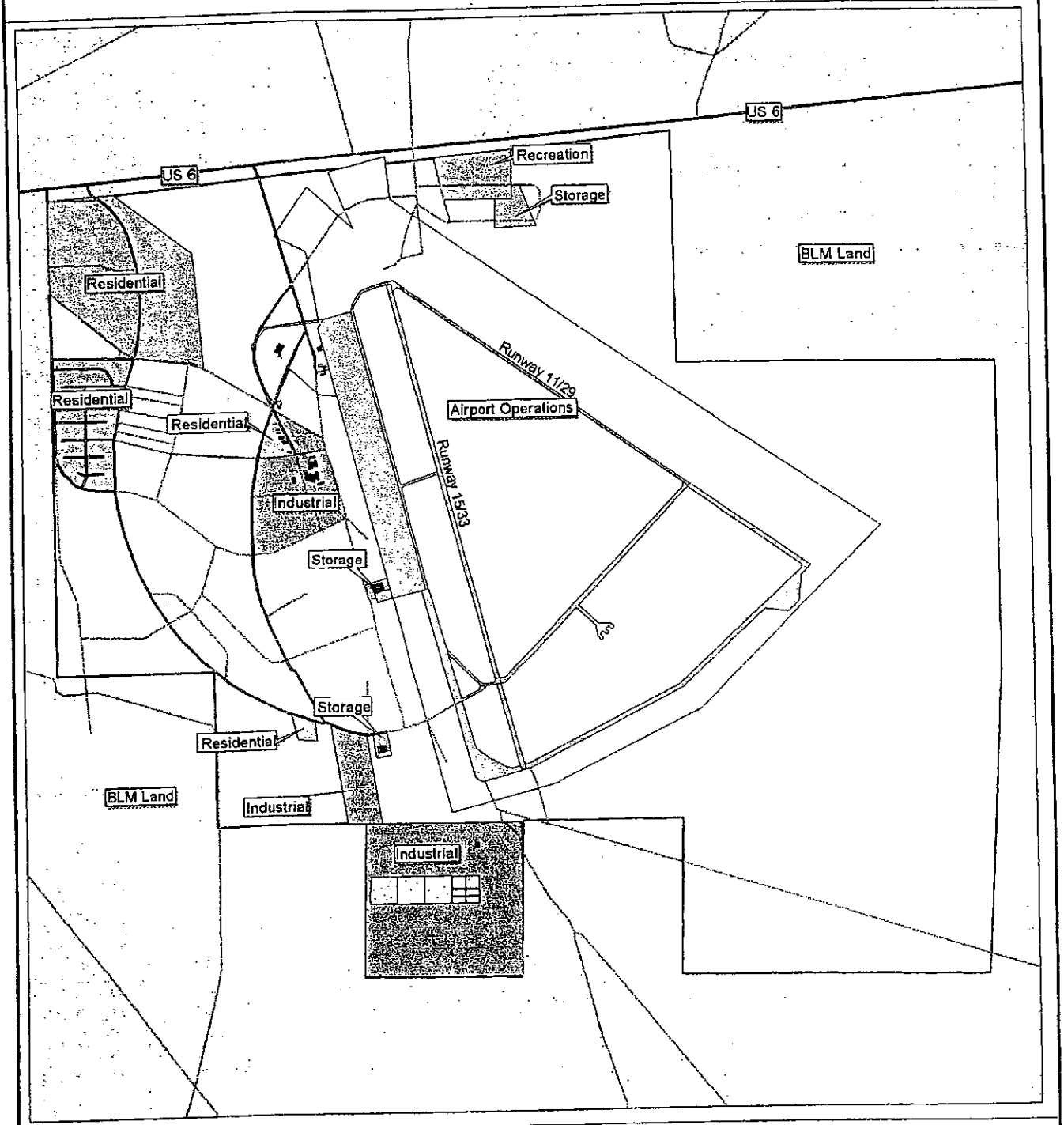
0.2 0 0.2 0.4 0.6 Miles

0.2 0 0.2 0.4 0.6 0.8 Kilometers

Projection: Universal Transverse Mercator, Zone 11
North American Datum 1983

Figure 5-6

Land Use



Legend

Land Use
- Airport Operations
- Industrial
- Recreation
- Residential
- Storage

N

0.2 0 0.2 0.4 0.6 Miles

0.4 0 0.4 0.8 Kilometers

Projection: Universal Transverse Mercator, Zone 11
North American Datum 1983

Figure 5-7

5.4 TRANSPORTATION

The Tonopah Airport is easily accessed off U.S. Highway 6. Two access roads serve the airport; these roads were called the Inner and Outer Taxiways when they were constructed by the Army in the early 1940s. The Inner Taxiway runs to the airport/aviation area and the Outer Taxiway runs west to Parcel No. 2. Many smaller roads exist within Parcel No. 2 that served various facilities when the Army Base was still in operation. However, many of these roads have deteriorated and, although they can still be used, are in poor condition.

The ALP provides for the continuation of airport access from US Highway 6. The access road is deteriorated, however, and should be improved.

Up to 50 automobile parking spaces are provided in the ALP within the terminal/administration area for airport employees, visitors, based and itinerant aircraft users, and potential passengers. The parking area should be paved.

The access road to the terminal/ administration area continues to the south along the west side of the apron and the area designated as potential aviation expansion. This road can be improved to provide access to this area as the demand warrants.

5.5 PUBLIC UTILITIES

An overview of utilities at the airport is provided below and illustrated on Figure 5-8.

5.5.1 Fuel Storage

Fuel service is provided by Desert Flying Service and is stored in three above-ground tanks. Gasoline is stored in two tanks each capable of holding 10,000 gallons of high-octane fuel. An additional tank stores up to 14,000 gallons of jet fuel.

5.5.2 Water

The airport receives water from pumps in Rye Patch, about 8 miles north of the airport, through an 8-inch waterline. The water is stored in a 500,000 gallon storage reservoir located southwest of the FAA/FBO facilities. All airport facilities draw water from this reservoir. A 10-inch water line runs west from the reservoir along the adjacent road until it intersects with the Outer Taxiway. This line then disperses into smaller lines that serve the residential units. The precise location of these lines is unknown due to the small amount of development that has occurred in the area.

5.5.3 Gas

Amerigas provides propane to all airfield-related facilities at the Tonopah Airport. This service is coordinated by the FBO.

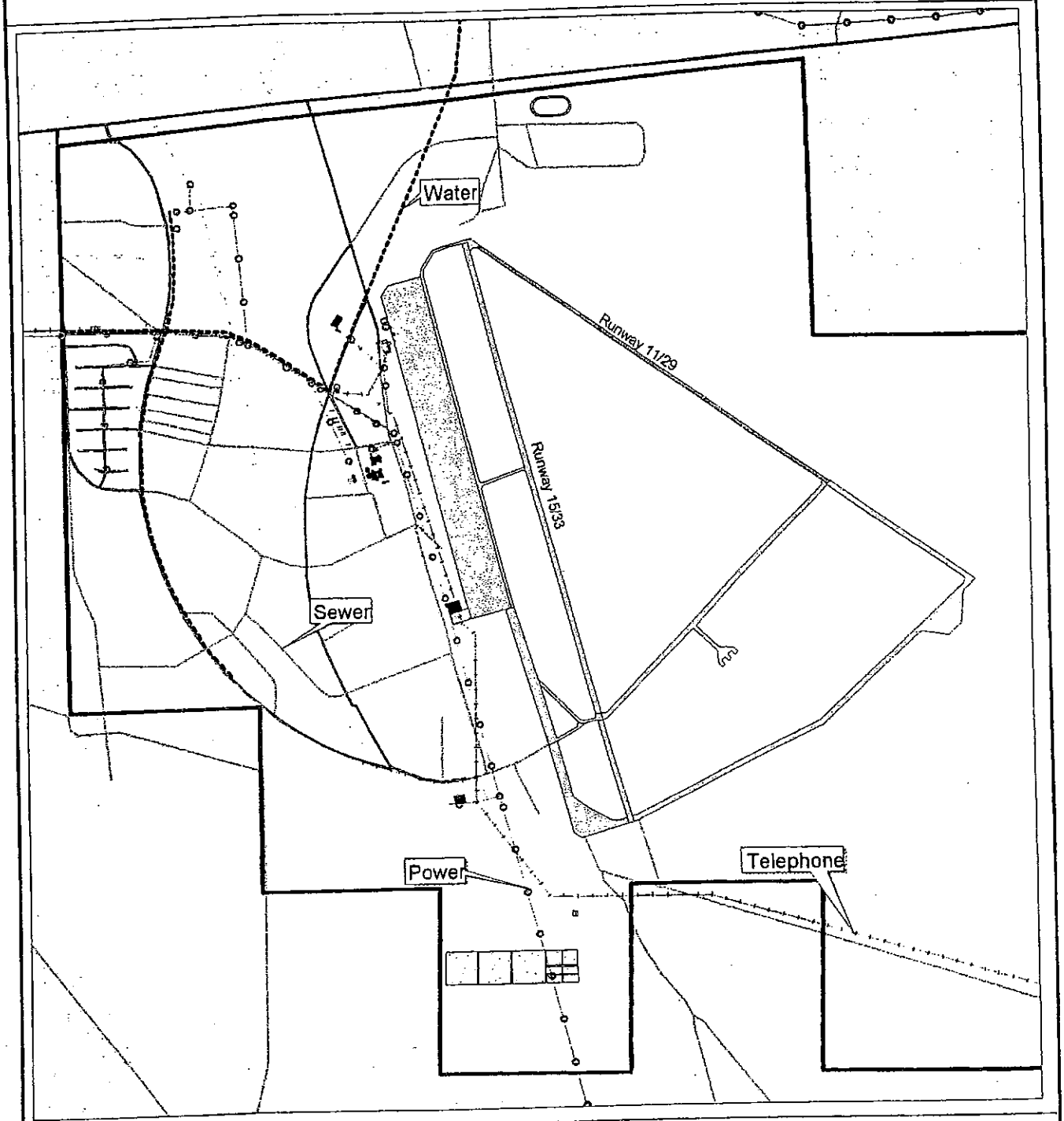
5.5.4 Electric

Sierra Pacific Power provides electrical service to the area through underground cables. This underground distribution system services all of Parcel No. 2, including the FAA/FBO buildings.

5.5.5 Sewage

A sewage treatment plant located south of the Tonopah Airport was built by the Army in the 1940s. In 1980, the treatment sewage plant was upgraded and now provides service to most of Parcel No. A 12-inch sewer line enters the airport from the plant; at that point, the line decreases to a 10-inch line and divides into two directions. One heads north toward the FBO/FAA facility; the other heads towards the northwest into Parcel No. 2. The residential units, Petro Source Corporation, and Tonopah Sand and Gravel are served by these lines. All support facilities for the airport use individual septic systems.

Utilities/Telecommunications, Water, Sewer



Legend
- Sewer Lines
- Power Transmission Lines
- Water Lines
- Telephone
- Sewage Treatment Ponds

N

0.2 0 0.2 0.4 0.6 0.8 Miles

0.2 0 0.2 0.4 0.6 0.8 Kilometers

Projection: Universal Transverse Mercator, Zone 11
North American Datum 1983

Figure 5-8

5.5.6 Telecommunications

Citizens Telecom provides telecommunication service to the Tonopah Airport. There are currently no fiber optic lines into the area, only copper cables hooked into the old World War II buried infrastructure.

5.6 ENVIRONMENTAL DATA

5.6.1 Geology and Soils

Geologic resources at the Tonopah Airport are similar to those discussed in Section 4. Soils at the airport primarily consist of silty sands, gravely silt-sand mixtures, and inorganic clay (see Figure 5-9)(USACOE 1995). The soil is extremely dry, and in many areas is covered with a mixture of sand and gravel. Due to previous activities the ground is heavily disturbed.

The Tonopah Airport is located in Seismic Zone 3, as identified in the UBC of 1994. The airport is free of any known surface faults. All faults in the surrounding mountain ranges are considered inactive because they do not cut through the alluvium.

5.6.2 Biological Resources

Biological resources at the Tonopah Airport are similar to those discussed in Section 4; however, due to its developed nature, wildlife in the immediate vicinity of the airport is likely limited to jackrabbits and snakes. No Candidate or Listed Species as classified under the Endangered Species Act of 1973 are known to exist at the airport. Refer to Table 4-2 for a listing of Sensitive, Candidate, or Threatened and Endangered Species that potentially occur in the vicinity.

The USFWS also developed a list for species of concern that may exist in the vicinity of the Tonopah Airport. The information has already been discussed in Section 4.5.3. See Table 4-3 for the USFWS listing.

5.6.3 Water Resources

No rivers or permanent bodies of water exist within the airport boundaries. Public water is provided by the Tonopah Municipal Water Company from wells located about 8 miles north of the airport in Ralston Valley.

Information regarding flood zones was gathered through Flood Insurance Rate Map (FIRM) obtained from the Federal Emergency Management Agency (FEMA). The majority of Tonopah Airport is within Zone X, which is located outside the 500-year flood plain; however, portions of the airport in Parcels No. 1 and 2 are in Zone A, representing 100-year flood areas with no base flood elevation determined (see Figure 5-10)(FEMA 1997).

5.6.4 Cultural Resources

Prehistoric

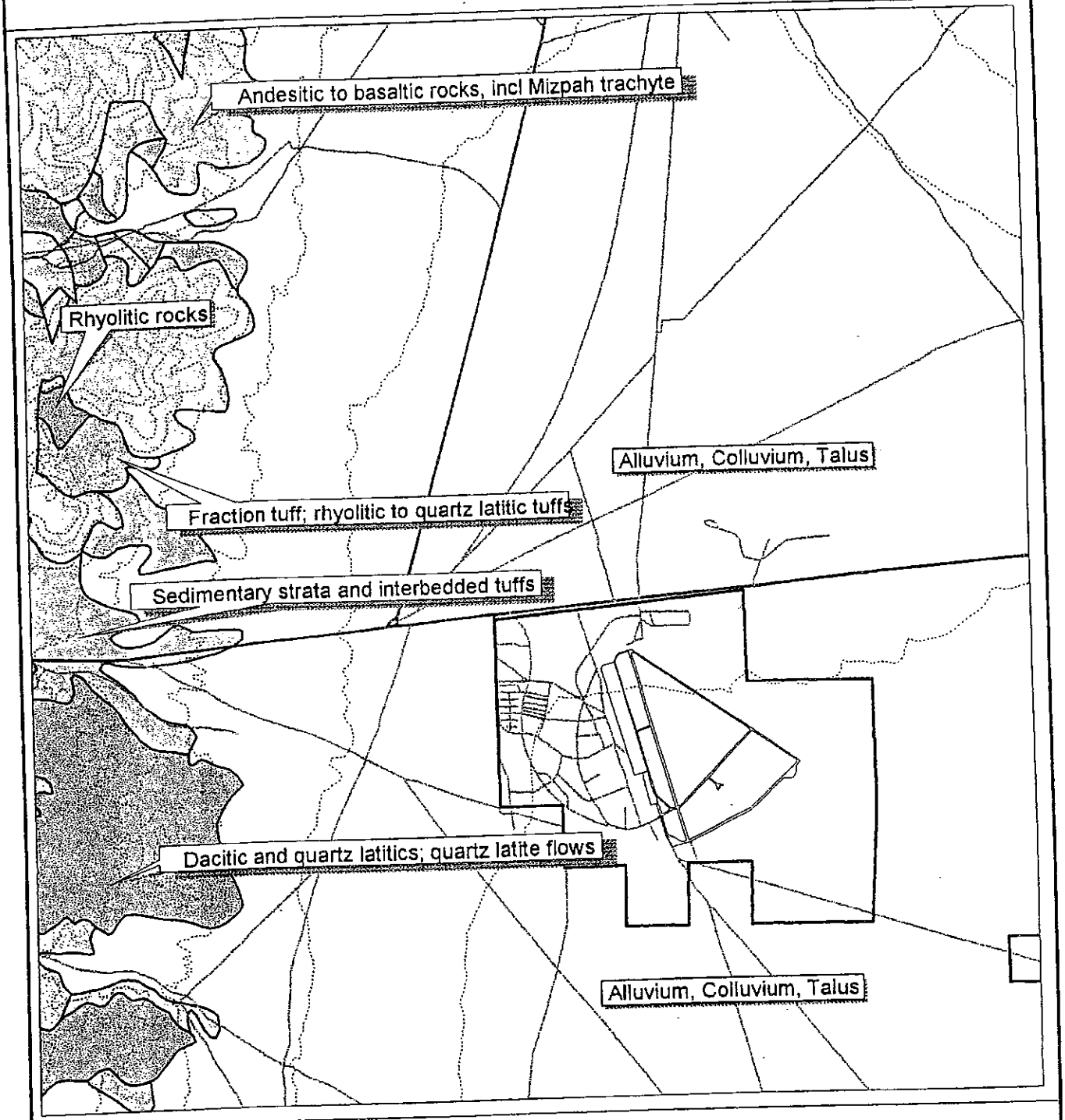
In February 1995, the BLM and the Carson City District Walker Resources Area evaluated the vicinity of the Tonopah Airport for potential cultural resources. Evidence of cultural resources was traced back to the Pre-Archaic period; however, no prehistoric cultural resource sites were identified on or near the Tonopah Airport.

Historic

Evidence of the old Army Air Corps Base built in 1940s still exists. Most of Runways 15-33 and 11-29 are still in use, although the southern taxiways have grown over with vegetation. The aircraft parking apron still exists and a portion was reconstructed with 43 tiedowns in 1982. The only remaining buildings are three wooden aircraft hangers that are still being used as storage facilities (see Figure 5-11).

The vehicular circulation system through the airport also remains. Two main roads (the Inner and Outer Taxiways) were constructed by the Army in the early 1940s; the taxiways are maintained for

Geology/Soils



Legend

Geology/Soils

- Alluvium, Colluvium, Talus
- Andesitic to basaltic rocks, incl Mizpah trachyte
- Dacitic and quartz latitics; quartz latite flows
- Fraction tuff; rhyolitic to quartz latitic tuffs
- Rhyolitic rocks
- Sedimentary strata and interbedded tuffs

N

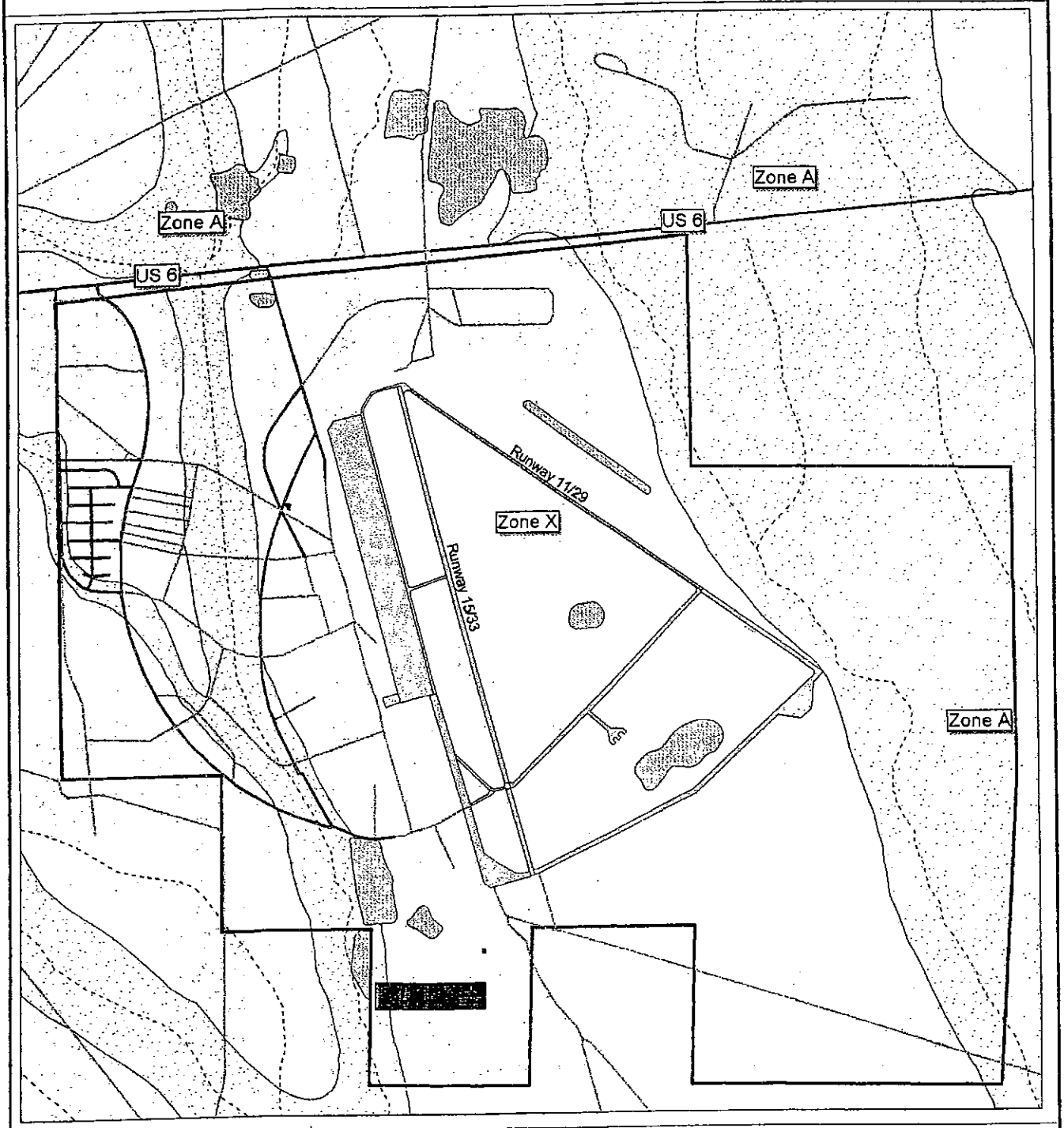
1 0 1 2 Miles

1 0 1 2 3 Kilometers

Projection: Universal Transverse Mercator, Zone 11
North American Datum 1983

Figure 5-9

Flood Plain Areas



Legend
- Intermittent Streams
- Gravel Pits
- Sewage Treatment Ponds

Flood Hazard Areas
- Zone A - Areas inundated by 100 year floods
- Zone X - Areas outside the 500 year flood plain

N

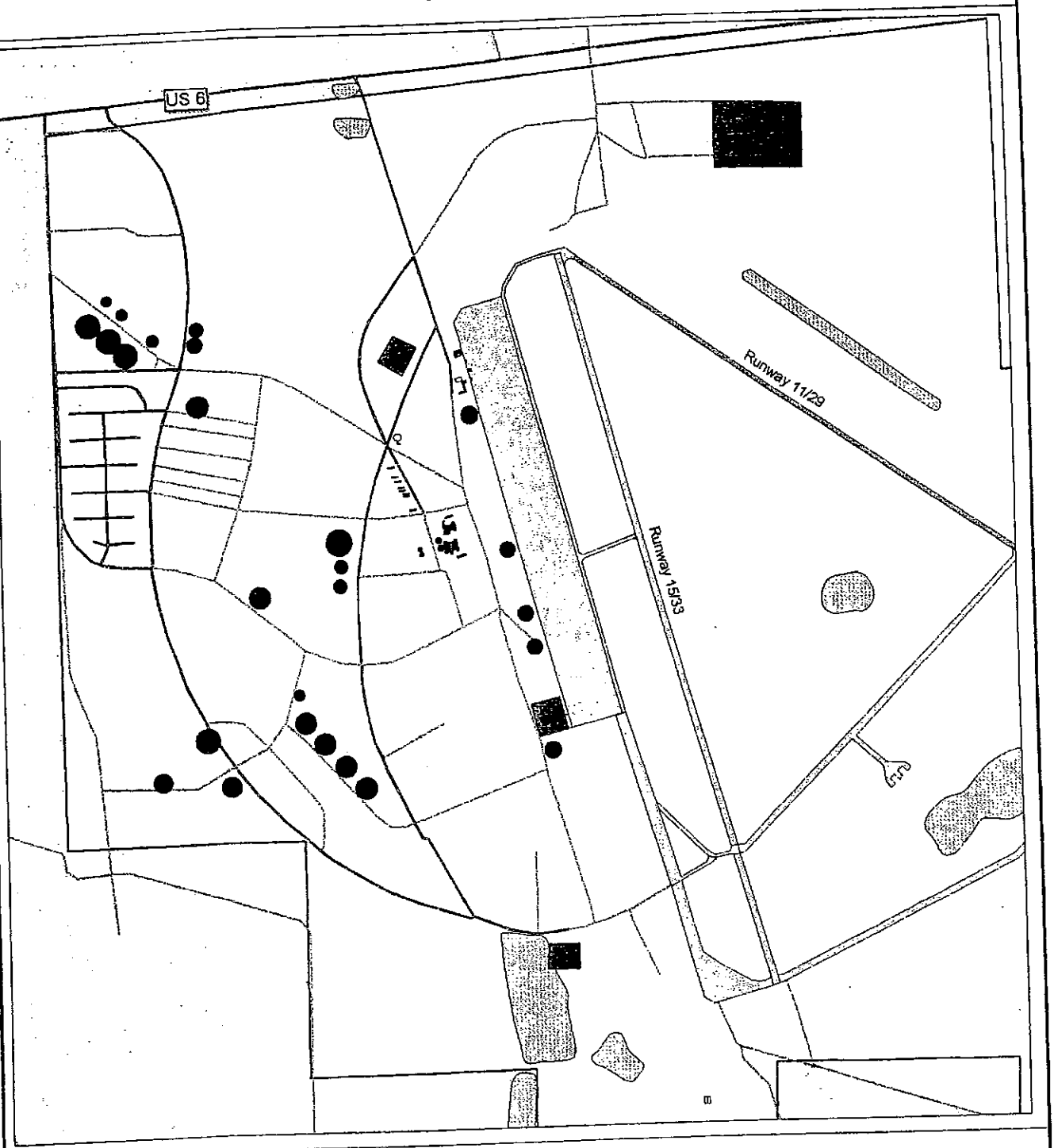
0.2 0 0.2 0.4 0.6 0.8 Miles

0.2 0 0.2 0.4 0.6 0.8 Kilometers

Projection: Universal Transverse Mercator, Zone 11
North American Datum 1983

Figure 5-10

Cultural Sites



Legend

- Structures Potentially Eligible for Listing in the NRHP
- Concentration of Ruins and Foundations of Potential Historic Interest

0.2 0 0.2 0.4 0.6 Miles

0.2 0 0.2 0.4 0.6 Kilometers

N

Projection: Universal Transverse Mercator, Zone 11
North American Datum 1983

Figure 5-11

service vehicles to access the site. Many smaller roads connecting to the taxiways still exist that served various functions when the Army Base was in operation; however, these roads have deteriorated.

Many concrete foundations are still present from the Army Air Corps Base and are scattered around the west side of the airport. The area east of the airfield bears the remnants of several old Army structures in various stages of disrepair. Three ammunition bunkers still exist and are currently being used as storage facilities. Before any demolition is performed, all of these structures need to be evaluated to determine their eligibility for listing in the National Register of Historic Places (NRHP).

5.6.5 Air Quality

Air quality at the Tonopah Airport is similar to that discussed in Section 4.5.4. The Tonopah Airport has been designated as being in attainment and is managed to prevent significant deterioration (U.S. Department of the Interior 1994).

The Tonopah Airport is not significantly affected by air pollutants. The area is surrounded by open desert lands with light vehicular traffic. Residential and commercial uses, aircraft structures, an oil refinery, and a gravel mining operation exist within the airport boundaries. These facilities create little traffic and relatively minor emissions compared to the size of Ralston Valley.

5.6.6 Noise

Noise is defined as unwanted sound or, more specifically, as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying (Federal Interagency Committee on Noise [FICON] 1992). Human responses to noise vary according to the type and characteristics of the noise source, the distance between the noise source and the receptor, the sensitivity of the receptor, and the time of day. Aircraft noise is the most noticeable environmental effect an airport will produce. If the sound is significantly loud and frequent, it may interfere with the community's activities and be protested.

Due to wide variations in sound levels, sound is expressed in decibels (dB), which is a unit of measure based on a logarithmic scale. Thus, a 10 dB increase in noise corresponds to a 100-percent increase in perceived sound. Under most conditions, a 5 dB change is necessary for noise increases to be noticeable (USEPA 1973). Sound measurement is further refined by using an A-weighted decibel scale (dBA) that emphasizes the range of sound frequencies that are most audible to the human ear (between 1,000 and 8,000 cycles per second).

The methodology used to determine aircraft noise levels uses a mathematical model for aircraft noise prediction. The Yearly Day-Night Average Sound Level (DNL) is the metric currently accepted by the FAA, the USEPA, and the Department of Housing and Urban Development (HUD). All of these federal agencies agree that the 65 DNL noise contour is the threshold for incompatibility. This means that noise levels below 65 DNL are considered compatible with other local lands uses. The acceptable DNL limits for different land uses is listed in Table 5-6.

Table 5-6
Yearly Day-Night Average Sound Level (DNL) in Decibels

Land Uses	*Below 65*	*65-70*	*70-75*	*75-80*	*80-85*	*Over 85*
Residential						
Residential, other than mobile homes & transient lodgings	Y	N1	N1	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N1	N1	N1	N	N
Public Use		*				
Schools	Y	N1	N1	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Transportation	Y	Y	Y2	Y3	Y4	Y4
Parking	Y	Y	Y2	Y3	Y4	N
Government	Y	Y	25	30	N	N
Commercial Use						
Offices, business, and professional	Y	Y	25	30	N	N
Wholesale and retail-building materials, hardware and farm equipment	Y	Y	Y2	Y3	Y4	N
Retail trade - general	Y	Y	25	30	N	N
Utilities	Y	Y	Y2	Y3	Y4	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing, general	Y	Y	Y	Y3	Y4	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y6	Y7	Y8	Y8	Y8
Livestock farming and breeding	Y	Y6	Y7	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y5	Y5	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts, and camps	Y	Y	Y	N	N	N
Golf courses, riding stables, and water recreation	Y	Y	25	30	N	N

Key
Y - Yes; land use compatible without restrictions.
N - No; Land use not compatible and should be prohibited.
NLR - Noise Level Reduction.
25, 30, 35 - Land use generally compatible; structure must attain an NLR of 25, 30, or 35 dB.

Notes
1. Structures (residential and schools) must achieve an NLR of 25 dB and 30 dB.
2. A NLR of 25 dB must be achieved in portions of building where public is received, office areas, noise sensitive areas, and where the normal noise level is low.
3. A NLR of 30 dB must be achieved in portions of buildings where the public is received, office areas, noise sensitive areas, and where the normal noise level is low.
4. A NLR of 35 dB must be achieved in portions of buildings where the public is received, office areas, noise sensitive areas, and where the normal noise level is low.
5. Land use compatible if special sound reinforcement system is installed.
6. Residential buildings require a NLR of 25.
7. Residential buildings require a NLR of 30.
8. Residential buildings not permitted.

Note: The above is a guideline only, noise compatibly and regulation of land use are strictly local responsibilities.

Source: FAR Part 150.

A noise study has not been conducted at Tonopah Airport to determine existing ambient noise levels; however, the airport is located in a very rural region. Primary noise sources in the area consist of aircraft take-offs and landings, vehicular traffic along U.S. Highway 6 located north of the airport, and industrial operations conducted at the airport lease areas. It should be noted that several residences are located within the airport boundaries (on the west boundary of Parcel No. 2); however, no noise ordinance currently exists for Nye County to identify compatible land uses.

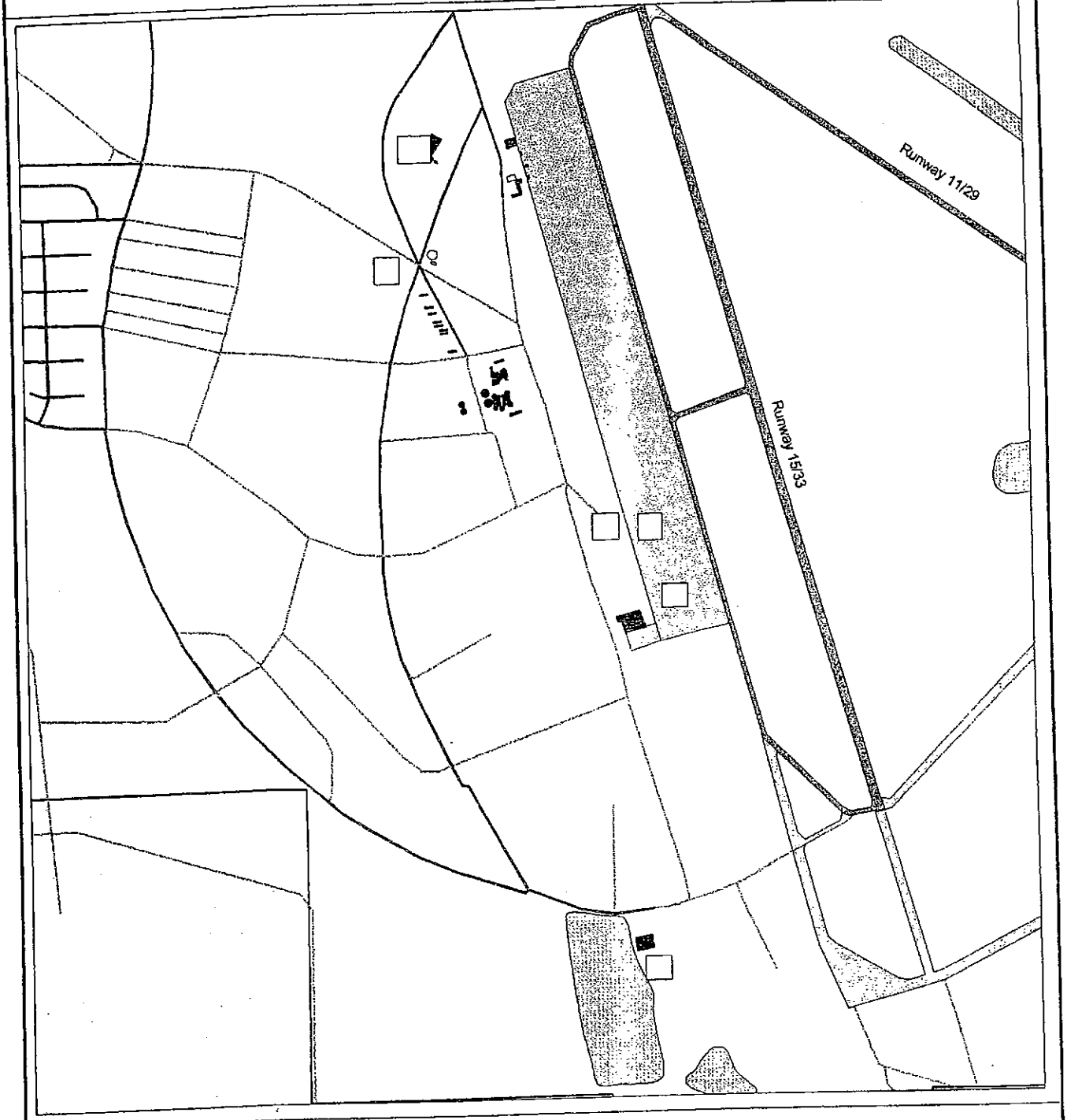
5.6.7 Potential Hazardous Waste Sites

The USACOE conducted an Environmental Evaluation at the Tonopah Airport in 1995 which found fill pipes and pits in five locations (Figure 5-12 and Table 5-7). These pipes indicate that underground storage tanks (USTs) or sludge pits could potentially exist (USACOE, 1995). The west area of the airport was later examined; another five potential USTs were found near burned down structures, and one UST was discovered next to the old stockade. Three potential USTs were also found next to the Donnels and Scott Road intersection. Finally, fill pipes were detected next to the old gas station site.

As a result of the evaluation, it was determined that investigation into and removal of the USTs and sludge pits should be performed to eliminate the worry of future leakage of hazardous material into the soil (USACOE 1995). In addition, an investigation into more tanks, garages, vehicle maintenance and other areas dating to the 1940s should be conducted to validate the existence of any other areas containing potentially hazardous materials. This analysis may be conducted using old Army Air Corps maps to narrow the areas in question.

There are no known environmental studies or documentation for the refinery site. This facility has been in operation since 1979. The lease expires in 2004, and has an additional 25-year option. Although a large concrete pad is located under the storage tanks, past activities could have resulted in fuel spillage. The areas surrounding the refinery should be tested for contamination prior to leasing.

Potential Hazardous Waste Sites (UST)



Legend

Potential Hazardous Waste Sites (UST)

N

0.2 0 0.2 0.4 Miles

0.2 0 0.2 0.4 Kilometers

Projection: Universal Transverse Mercator, Zone 11
North American Datum 1983

Figure 5-12

Table 5-7
Underground Storage Tanks and Sludge Pits

Location	*Possible UST / Sludge Pit*	*Material*
Hanger 1	UST with visible pipes and open sludge pit. Sludge pit opening 1.5 feet in diameter and 10 to 15 feet deep.	Sludge pit cement lined; material unidentified.
Foundation 1	UST with visible pipes and open sludge pit.	None.
Hanger 2	UST with visible pipes. Concrete pad, east of hanger. East of concrete pad are seven sets of pipes underneath grated covers along tarmac.	Possible fuel distribution area.
Foundation 2	UST with visible pipes at southeast corner. Large pit southwest of foundation. Pit was 10 feet long, 2 to 3 feet wide, 10 feet deep.	Pit lined with concrete. Empty except for brush and debris.
Hanger 3	UST with visible pipes. Covered sludge pit.	Pit filled with brush and debris.

Source: Environmental Evaluation, U.S. Army Corps of Engineers, 1995.

SECTION 6.0 ANALYSIS AND RECOMMENDATIONS

The proposed site plan for the Tonopah Aeronautics and Technology Park is the result of the analysis of existing conditions and current and future requirements. The existing conditions served to provide the parameters for development. This site plan leads to the most logical course of action for initial and future development at the airport.

6.1 PROGRAM PARAMETERS

6.1.1 Planning Assumptions

Several assumptions were made at the beginning of the master planning process that directly influenced the analysis and recommendations of this document. The key assumptions are included as follows:

- The primary focus of the Tonopah Airport will be for aviation-related activities. All efforts should be pursued to promote and enhance the existing airfield for projected and potential aircraft operations.
- The recommendations for the Tonopah Airport ALP would be foundational to the development of this Master Plan. Recommendations concerning the runway length, runway protection zones, approach surfaces, etc. would be treated as "givens" in the Master Plan.
- As recommended in the ALP, both Runway 15-33 and 11-29 will continue to be open for the foreseeable future. Additional taxiways connecting these runways will also be provided under the ALP.
- Existing leases at the airport will be treated as existing conditions, but should not necessarily determine long term development.
- Diversified uses would be explored at the Aeronautics and Technology Park. This has included the potential for aviation and non-aviation industrial parks, commercial activities, and the potential for depot-level maintenance of tactical jet aircraft.
- Any new development would likely occur near existing infrastructure and within proximity of the Runway 15-33 flight line.

6.1.2 Planning Factors

Issues resulting from an analysis of the existing conditions phase of the project include:

- The areas with the highest initial development potential are found within Parcel No. 2 in areas unencumbered by existing activities, airfield constraints, or floodplains. It should be noted, however, that each of these areas are located in the master lease for Parcel No. 2, an issue which must be addressed before any new development takes place.
- Initial development is recommended for an Aviation Industrial Park on approximately 40 acres north of the FAA/FBO complex. This location has good access to the airfield and to Highway 6.
- Should an Adversary Aircraft Facility become a reality in the future, the area south of the oil refinery lease should be set aside for this purpose. This area is approximately 140 acres in size which may be adjusted based on the individual needs of the tenant.
- Large areas of the Tonopah Airport are within the 100-year floodplain. In addition to requiring extra engineering to build in these areas, coordination may be required with the USACOE if these areas are deemed to be "Waters of the U.S."
- No known threatened or endangered species are located within the boundaries of the Tonopah Airport.
- Surveys will be required of potential historic and cultural resources on the airport to determine their eligibility for listing in the National Register of Historic Places.

- Expanded industrial and commercial uses at the airport should be consistent with initial development as well as the planned use of the airfield.
- No noise study has been conducted for existing or planned uses at the airfield. Should the use of the airport or the mix of aircraft change significantly, a noise study should be conducted.
- Several potential hazardous waste sites have been identified at the airport. These should be investigated to determine the existence of any potential contamination, and mitigation measures implemented.

6.2 ALP REQUIREMENTS

As mentioned above, any new development at the Tonopah Airport must be compatible with the planned use of the airfield. The uses and land areas dedicated to aviation activities are outlined in the ALP. The ALP represents a guide for airport development through the year 2015 and indicates what areas should be reserved for aviation-related activity during this period. Major recommendations from the ALP are outlined below:

- Nye County should acquire approximately 160 acres of land from the BLM to provide protection and expansion of the arrival end of Runway 15-33.
- The recognition and protection of existing navigation easements should take place before any development occurs.
- The ALP recommends that Runway 15-33 be extended to 9,100 feet to accommodate ARC B-II aircraft and FAA projected operational demand.
- The ALP further recommends the continued retention of Runway 11-29 and its eventual reconstruction and lengthening to 7,300 feet.
- The existing parallel taxiway should be extended and new taxiways installed to connect the south end of both runways. An additional taxiway connecting the approximate midpoint of both runways is also recommended.
- A precision instrument approach surface of 50:1 is provided for Runway 15-33. A non-precision instrument approach (34:1) is provided for Runway 11-29. All improvements under these areas should respect these clearances to ensure that airport operations are not encumbered.
- General aviation facilities are proposed to remain west of Runway 15-33. The FAA/FBO area is planned to remain within approximately 26 acres currently allotted for this use on the northern edge of Parcel No. 2.
- The primary access road to the terminal/administration areas will continue to be from U.S. Route 6.
- Airport support facilities are planned adjacent to the FAA/FBO area, including a CFR facility, a consolidated fuel storage facility, room for a potential new commercial terminal, and T-hangars for based aircraft.
- The ALP identifies large areas within Parcels No. 1 and 2 for non-aviation revenue generating uses. The ALP further identifies a large area south of the oil refinery for "future airport development or non-aviation revenue producing" uses.
- The FAA strongly discourages any residential land uses on airport property.
- The FAA has identified the location of the sewage treatment plant as a potential issue. The planned threshold of the extended runway would be too close to arriving and departing aircraft. Thus, the plant must be covered or relocated to accommodate this extension.

Additional information on these and several other recommendations may be obtained from the ALP (April, 1998).

6.3 COMPOSITE CONSTRAINTS ANALYSIS

Development at the airport may be impeded by issues such as airfield constraints, existing leases, infrastructure, and environmental issues.

6.3.1 Real Estate

Land Acquisition

Land will need to be acquired from the BLM. The BLM currently owns and manages the majority of land surrounding the Tonopah Airport. About 160 acres south of the airport will need to be acquired in order to accommodate the expansion of Runway 15-33.

Recommendations

- Coordinate with the BLM and FAA to acquire the necessary 160 acres of land.
- Conduct environmental assessments for land transfer/acquisition projects involving a federal action.

Leases

There are currently four parcels within the airport. Parcel No. 3 contains the airfield. Ownership of this parcel is in question according to the Nye County Assessor's Office; both the County and the federal government claim ownership of this land.

Parcels No. 1 and 2 currently contain leases for commercial, industrial, and residential activity. Parcel No. 4 contains the sewer treatment plant. Special attention must be given to future leases to ensure compatible land uses with airport operations.

Recommendations

- Coordinate with the FAA to determine land ownership of Parcel No. 3.
- Consider recommendation of the Master Plan and ALP prior to negotiating new or extended leases at the airport.

6.3.2 Airport Activities

Airport Operations

Desert Flying Service Inc., is a full-service FBO that provides general aviation facilities and services to the Tonopah Airport.

Airport Maintenance is undertaken by Nye County. Conditions are determined by the FBO, who in turn requests maintenance service from county staff.

Recommendation

- Per the ALP, the location of general aviation facilities will remain in the same location and should not be a constraint to development.

Airport Navigational and Landing Aids

Navigational and landing aids at the airport include the Tonopah VORTAC; a lighted tetrahedron and wind sock; a rotating beacon; and a 4-box, two-bar VASI. Runway 15 is equipped with a 2-light PAPI, although it is currently inoperable. HIRL are located along Runway 15-33 and the parallel taxiway is also lighted with MITL.

Recommendation

- Improvements to the navigational and landing aids at the Tonopah Airport will occur through the AIP; constraints are covered by the Approach Surface restrictions listed below.

Runways, Taxiways, and Aprons

There are two runways located at the airport: Runway 15-33 (Primary) and Runway 11-29 (Crosswind). The ALP recommended that Runway 15-33 be extended to 9,100 feet to accommodate ARC B-II aircraft and the Cessna Citation III, the "critical" design aircraft designated by the FAA for this airport.

Existing Leases and Land Uses

Industrial land uses exist within Parcel No. 2 within separate leases. The Petro Source Corporation, consisting of 63 acres, is a petroleum refining plant. Tonopah Sand and Gravel, Inc., encompasses about 21 acres and operates a sand and gravel pit.

Two of the three old Army aviation hangers are used for storage within their dedicated leases. Also, the old ammunition bunkers in Parcel No. 1 are used for various storage functions. Storage areas are also associated with several of the other leases.

Residential units exist along the west boundary of Parcel No. 2 within a 14 acre housing development. Little development has occurred and only a few houses exist.

Within Parcel No. 1, along the airport's northern boundary, is an amateur automobile race track consisting of 22 acres. This race track is operated by the CNRA.

Because of the small amount of development that has occurred at the airport in recent years, much of the area may be classified as undeveloped or open space. The majority of Parcels No. 1 and 2 may be placed into this classification

Recommendations

- Existing leases and land uses represent constraints to increased development (as shown on the Development Potential map). These leases have varying durations and many will terminate in the next ten years.
- Land uses inconsistent with the recommendations of this Master Plan and the ALP should not be renewed, and careful consideration must be given to any new land uses to ensure compatibility.

6.3.3 Transportation

The Tonopah Airport is easily accessed off U.S. Highway 6. Two access roads serve the airport; these roads were called the Inner and Outer Taxiways when they were constructed by the Army in the early 1940s. The Inner Taxiway runs to the airport/aviation area and the Outer Taxiway runs west to Parcel No. 2. Many of these roads have deteriorated and, although they can still be used, are in poor condition.

Recommendations

- The current roadway system is sufficient for initial development; however, road upgrades may be required for increased traffic volume generated by advanced development.

6.3.4 Utilities

Fuel Storage

Fuel is stored in three above-ground tanks located northeast of the FAA/FBO facility. The tanks should be relocated away from the flight line and inhabited buildings, and bermed for environmental safety.

Water

The airport receives water from pumps in Rye Patch, about 8 miles north of the airport, through an 8-inch waterline. Water lines runs west from a reservoir and disperse into smaller lines that serve the residential units.

Gas

Amerigas provides propane to all airfield-related facilities at the Tonopah Airport. This service is coordinated by the FBO.

Electric

Sierra Pacific Power provides electrical service to the airport. This system services all of Parcel No. 2, including buildings on the flight line.

Sewage

A sewage treatment plant is located south of the Tonopah Airport within Parcel No. 4. The plant was upgraded in 1980 and now provides service to most of Parcel No. 2. However, the sewage treatment plant may increase the presence of birds around the airfield and has been identified by the FAA as a potential issue inhibiting the expansion of Runway 15-33.

Telecommunications

Citizens Telecom provides telecommunication service to the Tonopah Airport. There are currently no fiber optic lines into the area, only copper cables hooked into the old World War II buried infrastructure.

Recommendations

- Investment in utilities will be required when expanding the airport. Several areas have no utility service and other areas will require significant upgrades.
- Conduct an engineering analysis to determine the most cost effective way of expanding the utility systems to meet the demands of new development.
- Conduct an engineering study to modify or relocate the sewage treatment plant to meet FAA requirements.

6.3.5 Environmental Issues

Geology and Soils

Soils at the airport primarily consist of silty sands, gravely silt-sand mixtures, and inorganic clays. The soil is extremely dry, and in many areas is covered with a mixture of sand and gravel. Due to previous activities the ground is heavily disturbed. The Tonopah Airport is located in Seismic Zone 3, as identified in the UBC of 1994.

Recommendations

- For surface conditions, new development will require surface flow design to gather or channel run-off. For subsurface conditions, analysis must be performed to determine footing design and construction constraints, although no significant constraints are foreseen.
- Although construction must meet building codes for the seismic activity, this is also not considered significant.

Biological Resources

According to the BLM, no Candidate or Listed Species are classified under the Endangered Species Act of 1973. Refer to Table 4-2 for a listing of Sensitive, Candidate, or Threatened and Endangered Species that potentially occur in the vicinity.

The USFWS has also developed a list for species of concern that may exist in the vicinity of the Tonopah Airport. See Table 4-3 for the USFWS listing.

Recommendations

- Since no known sensitive species are currently located at the airport, constraints to development are not anticipated.

Water Resources

No rivers or permanent bodies of water exist within the airport boundaries. Public water is provided by the Tonopah Municipal Water Company.

According to FEMA, the majority of the Tonopah Airport is within Zone X, which is located outside the 500-year flood plain; however, portions of the airport in Parcels No. 1 and 2 are in Zone A, representing 100-year flood areas with no base flood elevation determined.

Recommendations

- Floodplains represent development constraints at the airport, as shown on the Development Potential map. The cost and potential special permits required dictate that these areas should be avoided, at least for initial development phases.

Cultural Resources

The only remaining buildings from the old Army Air Corps Base are the three wooden aircraft hangers. Many concrete foundations are still present from the Base and are scattered around the west side of the airport. The area east of the airfield bears the remnants of several old Army structures in various stages of disrepair.

Previous studies have identified no prehistoric cultural resource sites on or near the Tonopah Airport.

Recommendations

- Conduct a historic resource evaluation of the three wooden hangars, concrete foundations, and other old Army structures to determine their eligibility for listing in the National Register of Historic Places.
- Reserve one of the wooden hangars for a potential museum dedicated to the history of the Army Air Corps Base.

Air Resources

The Tonopah Airport is not significantly affected by air pollutants. The area is surrounded by open desert lands with light vehicular traffic. Existing facilities create little traffic and relatively minor emissions compared to the size of Ralston Valley.

Recommendations

- Air emissions do not present significant constraints to development.
- Increased aircraft and vehicular traffic volumes due to expanded airport facilities must be controlled to meet National Ambient Air Quality Standards.

Noise

Noise is not an issue at the Tonopah Airport due to the current aircraft operations and the sparse development within the site. However, expanding the airport will increase aircraft operations, thus increasing noise levels in the area.

Recommendations

- Noise is not anticipated to be a development constraint for initial industrial and commercial uses.
- A noise study should be conducted if aircraft operations change significantly.
- Land use in and around the airport should be controlled to ensure land use compatibility.

Potential Hazardous Waste Sites

Several locations containing USTs or sludge pits potentially exist at the airport. Other locations may exist from the Army Air Corps Base.

There are no known environmental studies or documentation for the refinery site. This facility has been in operation since 1979; past activities could have resulted in fuel spillage.

Recommendations

- Conduct an investigation into and removal of the USTs and sludge pit.
- Conduct an investigation to determine if more tanks, garages, vehicle maintenance and other areas dating to the 1940s exist that may have contained potentially hazardous materials.
- Conduct soils tests around the refinery site to determine if any contamination exists. Mitigate as necessary prior to leasing adjacent areas.

6.4 PROXIMITY TO REGIONAL FACILITIES

The development potential for the Tonopah Aeronautics and Technology Park (see Figure 6-1) is derived from a collective analysis of natural and man-made constraints, major planning issues, projected airfield use, and current site activities. The development areas are categorized as high, medium, and low potential.

Areas of high development potential are sites containing minimal facilities, adequate infrastructure, and little or no mitigation measures required for construction. Medium development potential areas are defined as sites that are relatively unconstrained, but have a lack of infrastructure (roads and utilities) that inhibit their immediate development. Areas significantly encumbered by airfield constraints or floodplains are classified as having low development potential. It should be recognized that some areas having development potential are within larger leased parcels, an issue that must be negotiated prior to increased development.

As a general overview, the majority of development areas are available within Parcel No. 2, in areas outside of floodplains and existing development. Areas with medium development potential occur adjacent to the airfield in Parcel No. 1 and south of the airfield between Runways 15-33 and 11-29. Areas of low development potential occur on the airfield, in areas under runway approach slopes, and within floodplains in Parcels No. 1 and 2.

6.4.1 Development Potential

The Tonopah Aeronautics and Technology Park is well positioned for significant economic development. Located midway between Las Vegas and Reno, the Tonopah Airport is close to ten major metropolitan centers from San Francisco to Phoenix. The excellent runway facilities provide an enviable asset that can be a catalyst for economic growth. Although located close to the Town of Tonopah, the airport is physically separated within the Ralston Valley to allow nearly unencumbered aviation operations and industrial uses. Development potential at the Tonopah Airport is further enhanced by clear air, unencumbered flying conditions, few regulatory requirements, and a very supportive local community. The area also provides access to major high-tech government facilities at the NTS, TTR, Nellis Range, and Yucca Mountain.

6.4.2 Initial Facilities

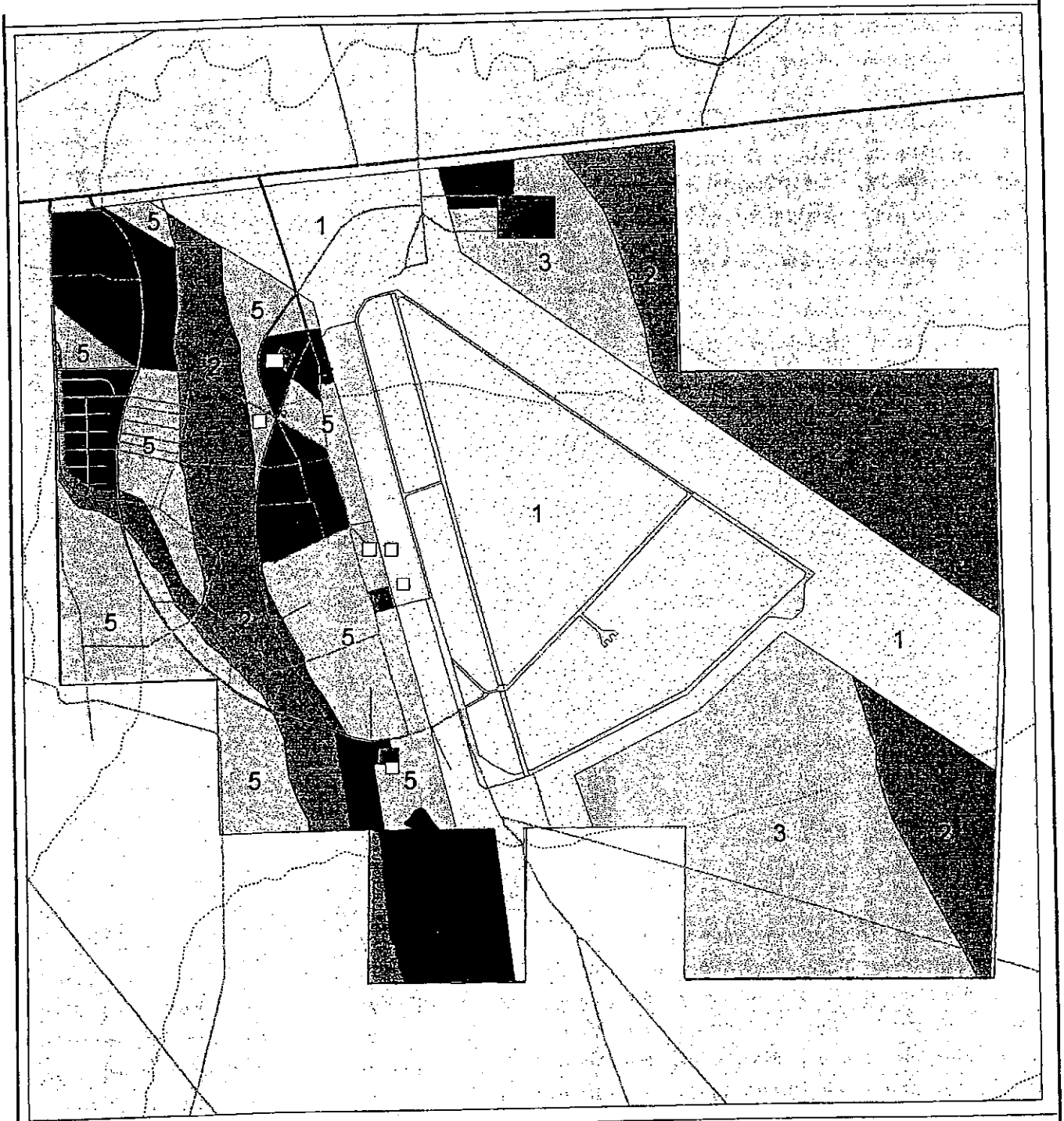
Two initial development sites are recommended in this Master Plan: an industrial park and an area dedicated to depot-level aircraft maintenance (see Figure 6-2).

Airport Industrial Park

The industrial park is located on approximately 40 acres immediately north of the FAA/FBO complex, and west of the airfield. Although this industrial park may be used for non-aviation purposes, its location and proximity to the flight line make it an ideal location for an Airport Industrial Park. The Airport Industrial Park is a recent trend in industrial development. Increased reliance on air transportation is attracting industries to locate on or adjacent to airports. Therefore, there is a need to encourage this activity which is compatible to both the airport and the community from a functional and safety perspective.

The integration of properly sited industrial development within airports can bring long term economic benefits to communities and to the airports which serve them. They also bring relief to the pressing problems of compatible land uses in airport environs. Easy highway access, flat terrain, existing utilities, availability of air transportation, and the location within the Tonopah Aeronautics and Technology Park combine to make this site a strong candidate for industrial development.

Development Potential



Legend
- Potential Hazardous Materials
- Potential Historic Resource

Low Development Potential
- 1. Airfield Constrainls
- 2. Floodplain

Medium Development Potential
- 3. Lack of Infrastructure

High Development Potential
- 4. Existing Leases and/or Development
- 5. Relatively Unconstrained *

N

1000 0 1000 2000 3000 4000 5000 Feet

500 0 500 1000 Meters

Projection: Universal Transverse Mercator, Zone 11
North American Datum 1983

* Note: Areas shown fall under Master Lease covering most of Parcel No. 2

Figure 6-1

The Airport Industrial Park can be defined as an industrial park located on or adjacent to an active airport and is designed to integrate air transportation into the industrial operation. In addition to its airport location, the following are distinguishing features of a typical Airport Industrial Park:

- Direct access from the industrial installation to the aircraft movement areas by taxiways or close proximity to the aircraft parking aprons.
- Compatibility of locating industries which are interested in making maximum use of air transportation in the movement of personnel and products.
- Horizontal, rather than vertical development of structures consistent with facilities adjacent to critical approach surfaces.

In recognition of this opportunity, an extensive set of guidelines for planning the Airport Industrial Park is included in an appendix to this Master Plan (Appendix A). Information in these guidelines were partially derived from FAA Adversary Circular 150/5070-3, "Planning the Airport Industrial Park."

Adversary Aircraft Facility

The other initial development area is dedicated to a potential Adversary Aircraft Facility supporting depot-level maintenance of tactical jet aircraft. This function has been identified has having a strong possibility of occurring at the Tonopah Airport. Such a facility would need to be located adjacent to the aircraft parking apron and would include such facilities as aircraft hangars; fueling areas and storage; specialized maintenance shops for avionics, armament, engines, electronics, communications, and other aircraft components; air housing facilities; and administration offices. For planning purposes, this Master Plan provides space to accommodate 58 tactical jets. Thus, approximately 140 acres has been set aside within Parcel No. 2 south of the refinery and west of the existing parking apron. Should this use not materialize, the property may be used for non-aviation revenue generating purposes.

To provide an idea of the scope of facilities required by this type of operation, a basic facilities list has been prepared and is included as an attachment to this Master Plan (Appendix B). The requirements are based on DoD criteria for A-4 aircraft (this has been proposed as the initial phase of this activity at the Tonopah Airport).

Many of the recommendations in the ALP will accommodate A-4 aircraft, including a length and width of Runway 15-33. Other facilities which may need to be added by the County or the tenant would include blast pads, paved shoulders, and additional navigational aids.

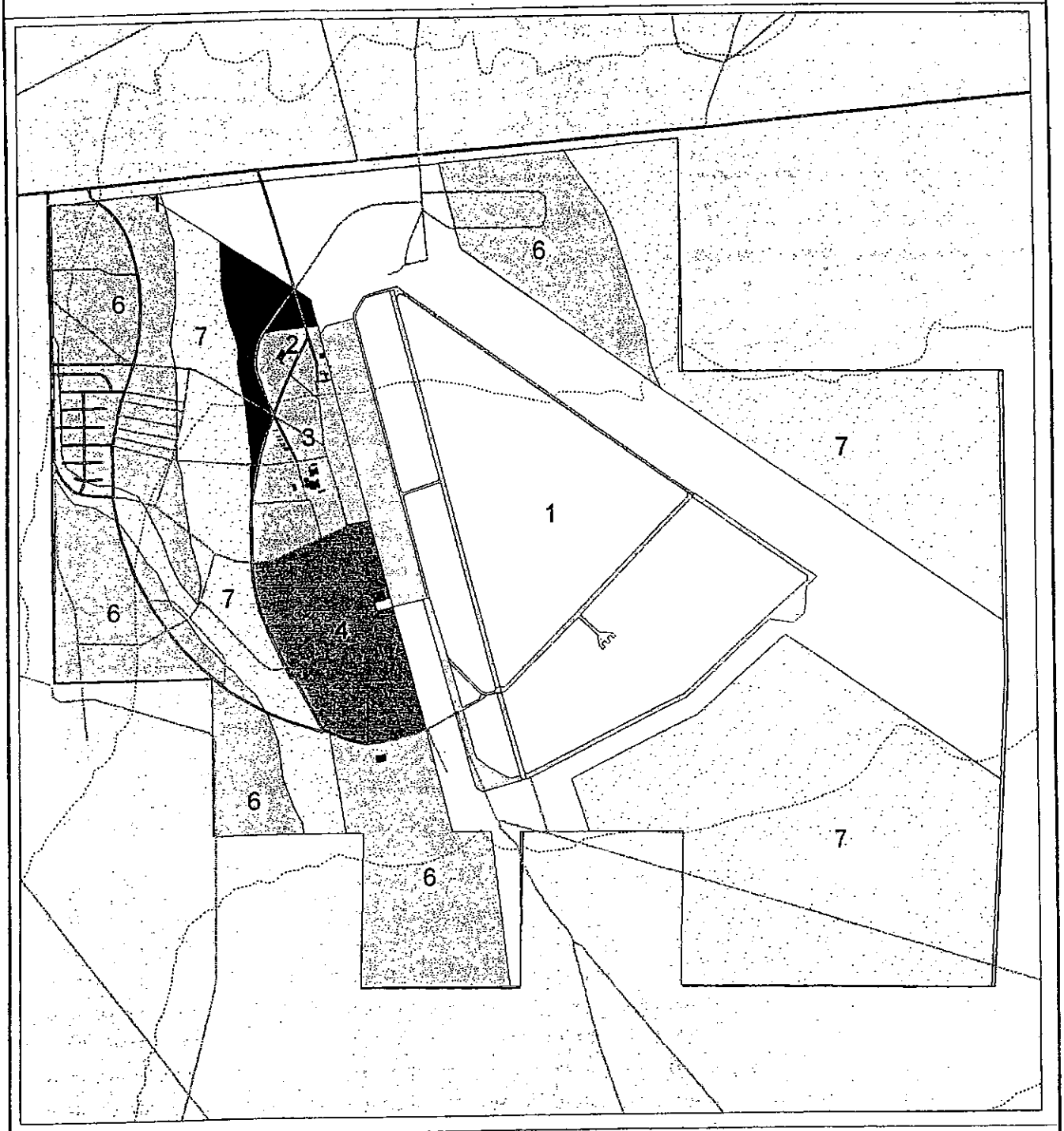
6.4.3 Long Term Expansion Plan

Once the initial facilities have been provided, additional development will be drawn to the Tonopah Aeronautics and Technology Park site. Anticipating this, an expansion plan has been proposed as shown on Figure 6-3. The area along the flight line between the FAA/FBO complex and the Adversary Aircraft Facility should be reserved for commercial aviation and support. Should the lease on the refinery not be renewed, this area would also be dedicated to commercial aviation activities.

Non-aviation related industrial, commercial, and recreational uses are proposed for the areas located further from the airfield. These areas may benefit from proximity to the airport, but do not necessarily require direct access to the aircraft movement areas.

The floodplain area within Parcel No. 2 provides a natural buffer between aviation and non-aviation uses. Likewise, floodplains within Parcel No. 1 are considered to be open space due to the limitations of the floodplain, in addition to the lack of infrastructure in this area.

Tonopah Aeronautics and Techology Park Expansion Plan



Legend

1. Airfield
2. Airfield Management
3. Commercial Aviation/Support
4. Aircraft Maintenance
5. Aviation Industrial Park
6. Non-Aviation Industrial/Commercial/Recreation
7. Open

N

1000 0 1000 2000 3000 4000 5000 Feet

500 0 500 1000 Meters

Projection: Universal Transverse Mercator, Zone 11
North American Datum 1983

Figure 6-3

6.5 FUTURE ACTIONS

6.5.1 Recommendations

In order to make the Tonopah Aeronautics and Technology Park a reality several action will be required:

- **Market Analysis.** Identify industry associations and potential commercial firms that might be interested in expanding or relocating to Tonopah.
- **Aircraft Maintenance Facility.** Verify the viability of the Adversary Aircraft Facility and plan the area dedicated to that purpose accordingly.
- **Submit Airport Capital Improvements Plan.** Prepare and submit the Tonopah Airport Captial Improvement Plan (ACIP) to the FAA to begin the funding timeline for planned improvements.
- **Pavement Condition Report.** Prepare a Pavement Condition Report on Runway 11-29 and the outer closed taxiway to support reconstruction funding by the FAA.
- **Runway 11-29 Operations.** Monitor use of Runway 11-29 (number of operations, aircraft type, etc.) to justify reconstruction under Phase II of the ACIP.
- **Land Ownership.** Complete coordination with the FAA to resolve ownership of the airfield.
- **Sewage Treatment Plant.** Prepare an engineering study to modify or relocate the sewage treatment plant to meet FAA requirements.
- **Avigation Easements.** Implement, through ordinance, formal recognition and protection of the approach areas into each runway, as identified in the ALP.
- **Airport Operating Rules.** Prepare Airport Operating Rules (AORs) for review by the FAA prior to implementing new projects.
- **Telecommunications.** Expand a modern, high-data rate, telecommunications network to the Tonopah Airport to support business and industry.
- **Land Acquisition.** Work with the BLM to acquire approximately 160 acres of land at the approach end of Runway 33 to accommodate runway expansion.
- **Corridor Development Authority.** Establish a Corridor Development Authority to plan, oversee, and implement economic development in the Nevada Science and Technology Corridor. Coordinate with other efforts along the Corridor.
- **Perform an Infrastructure Engineering Analysis Report.** This report is needed to assess the current infrastructure, including utility capacity, and identify the ability of the current system to handle increased use. Coordinate with Tonopah Public Utilities (the permitting agency) for additional service, as needed.
- **Covenants and Restrictions.** Develop a plan with covenants and deed restrictions for initial development sites.
- **Historic Resources.** Conduct a historic resource evaluation of the three remaining World War II hangars and other old building areas to determine their eligibility for listing in the National Register of Historic Places. Apply for grant funding to preserve the properties (possibly as part of a historical museum) once eligibility is determined.
- **Fuel Farm.** Conduct an Engineering Study to relocate the fuel farm.
- **Soil Survey.** Conduct soils tests around the refinery to determine if any contamination exists. Mitigate as necessary prior to leasing adjacent areas.
- **Hazardous Material Sites.** Conduct an engineering study at other potential hazardous waste sites, as indicated in this plan and as shown on historic maps.
- **Coordinate with the Army Corps of Engineers.** Formally consult with the USACOE to determine if the washes and floodplains within the airport qualify as "Waters of the US."

- **Noise Study.** A noise study should be conducted at the airport, particularly if the Adversary Aircraft Facility becomes a reality.

6.5.2 Environmental Documentation

Many of the airfield improvements, including the proposed land acquisition and runway extensions, would involve federal funding or other federal "actions." As such, these improvements would require a review of environmental impacts under the National Environmental Policy Act (NEPA).

For a project which may have potential environmental impacts, but no significant or controversial impacts on the environment, an Environmental Assessment (EA) is developed. An EA would discuss the proposed action and then outline the current environmental baseline. The impact would then be discussed in this environmental framework to identify the potential impacts. Subjects discussed in the EA include biological, cultural, noise, land use, air quality, water quality, and viewsheds, among others.

If any actions would create a significant impact, or would otherwise have a broad adverse environmental effect, an EA may not be sufficient, and an Environmental Impact Statement (EIS) may be required. An EIS requires greater public involvement and would take longer to complete. Based on the preliminary information in this Master Plan, and EA would likely provide the level of analysis and environmental documentation necessary for the proposed improvements.

APPENDIX A

ISSUES IN DEVELOPING THE AIRPORT INDUSTRIAL PARK

APPENDIX A

ISSUES IN DEVELOPING THE AIRPORT INDUSTRIAL PARK

An industrial park must be located on or adjacent to an active airport and designed to combine air transportation into the industrial operations. There must be direct access from the industrial structures to the aircraft movement areas by either a taxiway system or by being located close to the aircraft parking apron. Compatible industries interested in making maximum use of air transpiration in their daily business functions should be attracted. Horizontal structures are designed, rather than vertical, to coincide with airfield height restrictions.

The following information was partially derived from the FAA (Advisory Circular 150/5070-3, Planning the Airport Industrial Park).

Factors Influencing Airport Industrial District Development

- Close proximity to a highway (U.S. Route 6) provides efficient access to the airport from nearby facilities.
- Open land adjacent to the airfield is important for modern horizontal-type industrial facilities.
- Flat terrain is best suited for industrial site development.
- Airport utilities should be shared between airport and industrial facilities.
- The availability of air transportation is a bonus for industrial facilities located close to airports.

Organization for Development

County Owned and Operated - the County may act as a chartered organization where it can do anything involving airport affairs as long as no violations to the State constitution or the County charter occur. The County conducts all management functions such as planning, writing leases with tenants, and enforcing lease restrictions. The management role would be performed by the airport manager acting as the principle executive on the airport board.

Industrial Foundation - the County may appoint an industrial foundation to be responsible for developing the property. The industrial foundation assumes the management role and contracts planning and engineering consultant services, appoints the agents for leasing or selling the lots, enforces the development standards and covenants or lease restrictions, and handles financial arrangements with the prospective tenants. The County provides the utilities and site development, and signs the sales contracts or lease agreements since ownership of the property is not transferred to the industrial foundation.

Contract Developer - the County may enter into a long term lease with a contract developer. The contract developer assumes the responsibility of financing the development; preparing the development plan, standards, and lease contract forms; entering into contracts with engineering services; negotiating and signing subleases, and manages the operation and maintenance of any projects.

Private Developments - involves a cooperation between the County and the developers who wish to develop property on or adjacent to the airport.

Physical Planning

Location

- The economy of layout and operations require the airport industrial park ideally be in one contiguous area.
- Industrial parks developed near the terminal have proven to be an efficient location, providing sufficient infrastructure has been developed.
- A location in the vicinity of general aviation has the advantage of being close to where aircraft will be stored

and maintained, keeping ground taxi time to a minimum.

Taxiway Access

- The taxiway system is important to the development pattern of the industrial park. The airport manager should reserve the right to establish a user charge for access privileges through the taxiways to the common-use landing areas.
- Taxiway access to each lot in the industrial park is not always necessary. An analysis of economic benefit must be made. In most cases, lots closest to the aircraft movement area are provided with taxiways.
- There are two main taxiway patterns: 1) a taxiway provided to lots directly abutting the aircraft movement areas; and 2) a taxiway into an aircraft parking apron which is surrounded by industrial lots.
- If no taxiway system is possible, the industrial park should be located as close to the general aviation apron as possible.

Street System

- Right-of-way and pavement width depend on anticipated traffic volumes.
- Primary feeder streets require a minimum of 48 feet of pavement within a 60-foot right-of-way.
- Right-of-way on secondary streets should be a minimum of 40 feet for a 24-foot (2-lane) street. If anticipated demand warrants more lanes, than a 60 feet right-of-way should be allowed for future widening of the street.
- Curbs and gutters are recommended rather than drainage ditches for a cleaner, more attractive site.
- Street intersections require a curb radius of 40 feet minimum for tractor-trailer vehicles.
- The number of entrances into the industrial park should be limited to discourage pass-through traffic that is not related to the park.

Off-street Parking and Loading

- Employee parking - one parking space for every 1.3 employees on combined shifts.
- Visitor parking - one parking space for every 15 employees.
- Company vehicles - one parking space for each company vehicle.
- Truck loading docks - for truck trailers, berths should be 14 feet wide by 60 feet deep, with an additional 60 foot depth for maneuvering; for pick-up trucks, berths should be 10 feet wide by 20 feet deep, with an additional 20 feet for maneuvering.
- Entrance driveways - entrance driveways for truck access should be offset from the truck parking ramp so trucks do not back into the street while entering the loading dock.
- Curb radius for trucks - 25 feet minimum; curb radius for automobiles - 15 feet minimum.

Building Setbacks

- A 30-foot front setback from the property line will allow about 36 to 48 feet from the edge of the street pavement. This should be sufficient for projects where the smallest lots are one-half acre or less.
- Side and rear setbacks of at least 25 feet are recommended for fire safety separation, aircraft clearance, and architectural integrity.
- Site coverage - 60 percent maximum, 50 percent preferable.

Site Layout

- Airport industrial parks should be at least 40 acres.
- Block dimensions will be determined by the park layout.
- The minimum lot width should be 100 feet. Depths may vary from 150 feet to 500 feet for sites from one-third of an acre to 10 acres.
- Longer blocks tend to be more cost effective than blocks with fewer lots.

Utilities

- Water, sanitary sewer, electric, natural gas, fire hydrants, and storm sewers are required.
- Utility easements should be incorporated in the right-of-way reserved for streets.
- Underground utilities should be strongly encouraged in aircraft taxiway rights-of-way and adjacent to the airfield.

Park Center

- A park center should be considered to include management and maintenance, as well as services for the tenants such as banking facilities, restaurants, shops, etc.

Landscaping and Architectural Design

- A high quality and standard of design for architecture and landscaping is an important factor in attracting and keeping tenants, as well as gaining and maintaining acceptance by the public.

Land Use Controls

Land use is usually controlled by local zoning laws and/or other restrictive covenants. In order for zoning to be successful, a comprehensive plan must be prepared. The comprehensive plan should include: height limitations so no obstructions to aircraft traffic are created; a design for the circulation system that incorporates airport access; an analysis of community facilities that support the airport's needs and operations; sufficient utility service to the airport; and restricting places of public gathering away from the approach zones of the airport.

It is recommended that the site be restricted to industrial uses. This is minimum legal protection for the airport from potential complaints from nearby residents.

Protective covenants, deed and lease restrictions, and development standards are documents that may be used by the airport industrial park to control the type, character, and appearance of the development.

Management and Operations

The purpose of an airport industrial park is economic gain for the community. The industrial park provides increased employment and expansion of industry and commerce by providing an attractive, efficient site for industry. The following is a series of steps to achieve this goal:

- An anaysis of the potential market must be performed to determine which types of industries should be attracted and the potential lease or sale price of the developed sites.
- Prepare a physical plan and a feasibility report after analyzing existing conditions. The physical plan is a graphic presentation of the future development. The feasibility report is a written description of the anticipated work involved in the development. This includes preliminary estimates of costs and basic decisions concerning types, routes and overall sizes of supporting utility systems, and recommendations for phased development.
- Arrange financing before detailed designing and construction begin.
- Prepare engineering drawings and specifications during the first stage of development.
- Realize that prospective tenants are much easier to attract after construction of the first stage of the development begins. Tenants want assurance that no delays will be created from site work or other unforeseen factors. Lots may be available by lease, sale, or both.

APPENDIX B

ADVERSARY AIRCRAFT FACILITY - PROSPECTIVE FACILITY REQUIREMENTS

APPENDIX B

ADVERSARY AIRCRAFT FACILITY - PROSPECTIVE FACILITY REQUIREMENTS

The following represents basic facility requirements for 58 A-4 aircraft based on requirements developed by the Naval Facilities Engineering Command (NAVFAC), Washington DC. It is intended only as a rough scope of facilities and must be adjusted to meet actual conditions. It assumes depot-level maintenance of aircraft, but no ordnance storage or handling (except for armament and arm/de-arm pads). Fuel storage and operations are included, as are additional runway improvements (such as approach lighting and runway centerline lights). The following summarizes the requirements detailed in the rest of the Appendix.

Table B-1
Prospective Facility Requirements Summary

CCN	*Description*	*Amount*	*U/M*
111-10	Runway/Fixed Wing	106,389	SY
112-10	Taxiway	98,083	SY
113-20	Aircraft Parking Apron	47	EA
113-40	Aircraft Access Apron	956	SY
116-10	Aircraft Washrack Pavement	803	SY
116-15	Aircraft Rinse Facility	910	SY
116-35	Arming and De-Arming Pad	8,400	SY
116-60	Fire and Rescue Vehicle Alert pad	1,867	SY
124-30	Aircraft Ready Fuel Storage	300,000	GA
136-10	Approach Lighting	6,000	FT
136-35	Runway Centerline Lighting	9,100	LF
136-55	Touchdown Zone Lighting	6,000	FT
143-75	POL Operations/Sampling/Testing Building	1,600	SF
211-05	Maintenance Hangar O/H Space	69,888	SF
211-06	Maintenance Hangar 01 Space	30,415	SF
211-15	Line Maintenance Shelter	960	SF
211-45	Avionics Shop (Non-NARF)	14,300	SF
211-54	Aviation Armament Shop	4,400	SF
211-55	Aviation Armament Support Equipment Holding Shed	2,000	SF
211-75	Parachute/Survival Equipment	5,200	SF
211-81	Engine Test Cell	2	EA
211-89	Power Check Pad w/out Sound Suppressions	2	EA
217-10	Electronics/Communications Maintenance Shop	3,000	SF
218-60	Ground Support Equipment Shop	6,250	SF
218-61	Ground Support Equipment Holding Shed	9,750	SF
411-82	Contaminated Fuel Storage	3	EA
441-10	General Warehouse	23,606	SF
441-30	Hazardous/Flammable Storehouse	3,074	SF
441-35	General Storage Shed	464	SF
451-10	Open Storage Area	6,670	SF
610-10	Administrative Office	7,500	SF

111-10 - Runway/Fixed Wing

Description

Runways are paved surfaces that allow aircraft to safely land and take-off. Requirements for runways are determined from factors such as traffic density, airfield mission, operational procedures and environmental factors. The orientation of runways depends on wind direction, terrain, and noise impacts upon local development.

Assumptions

Critical Aircraft	A-4
Elevation of Site	5,426 FT MSL
Mean Highest Temperature	85 degrees F
Effective Runway Gradient	0.3%
Take-off Ground Run	2,730 FT

Criteria

Altitude Correction	5,426/100 x 1.1% = 59.686% 2,730 x 1.59686 = 4,359 FT
Temperature Correction	(85-59) x .66% = 17.16% 4,359 x 1.1716 = 5,107 FT
Safety Factor Correction	5,107 x 1.6 = 8,171 FT
Effective Gradient	0.3 x 10% = 3% increase 8,171 x 1.03 = 8,416 FT

Runway length for critical aircraft A-4 should be 8,416 FT **(Round to 8,500 FT)**

	(8,500 FT x 75 FT)/9 = 70,833 SY
Shoulders	[8,500 FT x (10 FT x 2)]/9 =18,889 SY
Overruns	[(1,000 FT x 2)75 FT)/9 = 16,667 SY
Total Requirements	70,833 SY + 18,889 SY + 16,667 SY = **106,389 SY**

112-10 - Taxiway

Criteria

Taxiways are paved surfaces which aircraft utilize (under their own power) as access routes to runways, service stations, and parking areas.

Assumptions

A-4 aircraft require Class B runways.

Criteria

Taxiway length	11,770 FT
Taxiway width	75 FT
	11,770 FT x 75 FT/9 = **98,083 SY**

Exits for Class B Runways

End turn-offs	200 FT wide
Intermediate turn-offs	75 FT wide, placed 2,000 FT from each runway end and along runway length at intervals between 2,000 and 3,000 FT.

Safety Clearances/Separations

Minimum clearances from the centerline of the taxiway to:

Centerline of parallel runway	500 FT
Centerline of parallel taxiway	300 FT
Edge of parking apron	150 FT
Obstacles	150 FT

113-20 - Aircraft Parking Apron

Description

In addition to providing parking spaces, aircraft parking aprons are required for loading, unloading, and servicing of aircraft. The apron area is based on the type and total number of aircraft, less aircraft parked in hangars.

Assumptions

Apron edge must be at least 150 FT from centerline of taxiway.*
Total of 49 parking spaces: 7 aircraft deep, 7 rows.

Criteria

Plan proposes 58 A-4s to be based at the airport using 90 degree parking on the apron.

Number of Parking Spaces

Single engine carrier aircraft	Assume 20% of aircraft in hangars 58 aircraft x 80% = 46.4 **47 EA**

Apron Size

Apron width *	600 FT
Apron length	1,323 FT

113-40 - Aircraft Access Apron

Description

Aircraft access aprons provide a paved area for access from the parking apron to aircraft maintenance hangars.

Assumptions

A-4s require DoD Type I hangars.
Actual requirements may increase/decrease due to variations of local conditions.

Criteria

Type I hangar - 172 FT door width
(172 FT x 50 FT)/9 = **956 SY**

116-10 - Aircraft Washrack Pavement

Aircraft washracks are required for cleaning and maintenance of aircraft. Washracks must be located adjacent to the hangar area with access or apron pavement connecting the two facilities.

Assumptions

Type A washrack services 80 VA/VF aircraft
Based on 58 A-4s

Criteria

One Type A washrack is required - **803 SY**

116-15 - Aircraft Rinse Facility

Description

The aircraft rinse facility is an unattended, taxi-through, treadle operated, freshwater deluge system to rinse aircraft.

Assumptions

Based on 58 A-4s

Criteria

Type 3 rinse facility - for VF or VA aircraft = **910 SY**

116-35 - Arming and De-Arming Pad

Description

The arming and de-arming pad is a paved area for activating or deactivating weapons systems on-board aircraft. The number of pads depends upon the demand at the installation. Pads are located at either end of primary and crosswind runways. This facility is only needed if arming and de-arming functions are performed at the Tonopah Airport.

Assumptions

Based on 58 A-4s.
Actual requirements may increase/decrease due to variations of local conditions.

Criteria

Type B pad - will accommodate simultaneously four VA or four VF aircraft.
Total Requirements = **8,400 SY**

116-60 - Fire and Rescue Vehicle Alert Pad

Description

This facility provides parking for the Immediate Response Alert Vehicle, whose purpose is to observe all landings and take-offs, provide immediate action to any aircraft accident, and to aid injured personnel involved in emergencies.

Criteria

Minimum of 150 FT from runway edge, near the middle of the airfield.
Pad connected to runway with 16 FT wide access roadway.

Access Road:
(150 FT x 16 FT)/9 = 267 SY

Pad:
(120 FT x 120 FT)/9 = 1,600 SY

Total Requirement = 267 SY + 1,600 SY = **1,867 SY**

124-30 - Aircraft Ready Fuel Storage

Description

Aircraft ready fuel storage supplies operating and reserve aviation gasoline and jet fuel. There are two storage classifications: remote areas, storing the majority of fuel at fuel farms; and local areas providing fuel through storage tanks in close proximity to the fuel dispensing facility.

Assumptions

The requirement will increase or decrease based on actual projected operations
FH - flight hours
300 FH/YR per A-4 (based on similar historical information).
Average sortie uses 50% of fuel capacity (800 GA x 50% = 400 GA).

Criteria

300 FH/YR x 58 A-4s =	17,400.00	FH/YR
17,400 FH/YR / 12 MO =	1,450.00	FH/MO
1,450 FH/MO / 30 Days =	48.33	FH/Days
48.33 FH/Day x 400 GA =	19,332.00	GA/Days
10-Day Supply: 19,332 GA x 10 Days =	193,320.00	GA
Local Storage (Day Tank): 193,320 / 2	96,660.00	GA
Bulk Storage [250,000 GA - (96,660 GA x 50%)] =	201,670.00	GA
96,660 GA + 201670 GA =	298,330.00	GA
	(Round to 300,000	GA)
Total Requirement	**300,000**	**GA**

136-10 - Approach Lighting

Description

Approach lighting increases a pilot's ability to visually adjust to the runway environment during times of reduced visibility. Approach lighting should be provided for primary instrument approach runways.

Assumptions

Category I configuration used.

Criteria

Lighting: Barrettes of white lights placed perpendicular to the extended runway centerline.
Spacing: Spaced for a distance of 3,000 feet from runway threshold.
Operation: Sequenced flashing lights provided from each station from the 1,000 feet crossbar to end of 3,000 FT.

2 x 3,000 FT = 6,000 FT
Total Requirement = **6,000 FT**

136-35 - Runway Centerline Lighting

Description

Runway centerline lighting provides a visual aid to assist the pilot in keeping the aircraft centered on the runway during take-offs and landings at night or in reduced visibility conditions.

Criteria

White lights laid into the pavement aligned in the center of runway.
Placed at nominal 25-foot spacing.
Total Requirements are expressed in feet of runway length: **9,100 LF**

136-55 - Touchdown Zone Lighting

Description

Touchdown zone lighting outlines the runway touchdown zone and provides direction and roll guidance for aircraft approaching the threshold.

Criteria

Lighting: Bars of white light in pavement on each side of runway centerline.
Thirty pairs of bars, spaced 100 feet apart.
Location: Start at threshold, extend for distance of 3,000 feet.
Amount: 2 x 3,000 FT = 6,000 FT

Total Requirement = **6,000 FT**

143-75 - POL Operations/Sampling/Testing Building

Description

The POL Operations Building provides facilities for quality control and administration of all fuel activity. Administrative offices and a fuel testing laboratory are provided.

Assumptions

Based on previous experience with similar conditions (1,600 SF allowance).
Actual requirements may increase/decrease due to variations of local conditions.

Criteria

Total Requirement = **1,600 SF**

211-05 - Maintenance Hangar O/H Space

Description

Maintenance Hangars are utilized for the servicing and repair of aircraft at the organizational level under weather-protected conditions. Hangars also provide emergency shelter for operable aircraft.

Assumptions

Based on non-standardized squadrons for NAVFAC P-80.
3.5 "squadrons modules" are necessary to accommodate 58 A-4s.; 1 module per squadron.

Criteria

19,968 SF x 3.5 (Squadrons) = 69,888 SF
Total Requirement = **69,888 SF**

211-06 - Maintenance Hangar 01 Space

Description

This facility provides space for maintenance repair shops, equipment and crew space to perform routine aircraft maintenance within a hangar. A standard module is 8,690 SF per NAVFAC P-80.

Assumption

Based on non-standardized squadrons for NAVFAC P-80.
3.5 Squadrons are necessary to accommodate 58 A-4s.; 1 module per squadron.

Criteria

8,690 SF x 3.5 (Squadrons) = 30,415 SF
Total Requirement = **30,415 SF**

211-07 - Maintenance Hangar 02 Space

Description

This facility provides space within the maintenance hangar for squadron administration and storage. A standard module is 8,648 SF per NAVFAC P-80.

Assumptions

Based on non-standardized squadrons for NAVFAC P-80.
3.5 Squadrons are necessary to accommodate 58 A-4s.; 1 module per squadron.

Criteria

8,640 SF x 3.5 (Squadrons) = 30,240 SF
Total Requirement = **30,240 SF**

211-15 - Line Maintenance Shelter

Description

Line Maintenance Shelters are required in support of aircraft maintenance hangars. One line maintenance shelter may be planned for each aircraft maintenance hangar module.

Assumptions

3.5 Modules needed to support 58 A-4s.

Criteria

3.5 hangar modules = round up to 4
Shelter size - 20 FT by 12 FT = 240 SF
Total Requirements = 4 Shelters x 240 SF = **960 SF**

211-45 - Avionics Shop (Non-NARF)

Description

Avionics shops are required for intermediate maintenance level for the testing, maintenance, and repair of avionics systems.

Assumptions

Based on 58 A-4s.
Gross square footage determined from number and type of aircraft using Table 211-45A in NAVFAC P-80.*

Criteria

58 A-4s: 143* x 100 SF = 14,300 SF
Total Requirement = **14,300 SF**

211-54 - Aviation Armament Shop

Description

Aviation armament shops are required for intermediate maintenance of 24 or more aircraft capable of being armed. Maintenance of reusable or nonexpendable-type rocket launchers classified as ammunition items, as well as maintenance, and storage of missile launchers are handled in the armament shop.

Assumptions

Used Table 211-54B in NAVFAC P-80.
Assigned aircraft are A-4s.

Criteria

Assigned aircraft 58
Shop area 4,400 SF
Total Requirement = **4,400 SF**

211-55 - Aviation Armament Support Equipment Holding Shed

Description

An Aviation Armament Support Equipment Holding Shed is planned along with the CCN 211-54, Aviation Armament Shop. The shed provides shelter for armament support equipment. NAVFAC P-80 does not specify any particular requirements for this facility.

Assumptions

Based on previous experience with similar conditions.
Size of this facility will depend on local operations and needs.

Criteria

Total Requirement = **2,000 SF**

211-75 - Parachute/Survival Equipment

Description

This facility provides space for drying, inspecting, repairing, repacking, and storage of survival equipment and intermediate maintenance of other life support equipment

Assumptions

Used Table 211-75A and Table 211-75B in the NAVFAC P-80 to determine gross square footage.*
Total requirement for a Type II facility may vary due to actual assigned number of nonpersonnel chutes.

Criteria

58 (A-4s) x .07 = 4.06 sizing
Type I = **4,000 SF**

Type II Shop includes inspecting, repairing, washing, and drying aircraft, cargo, or other special purpose parachutes.

Type II facility add 1,200 SF
4,000 SF + 1,200 SF = 5,200 SF
Type II = **5,200 SF**

211-81 - Engine Test Cell

Description

An Engine Test Cell is utilized at locations where engine repair is performed and provides an acoustically attenuated and fully instrumented enclosure in which uninstalled turbojet and turbofan engines are tested. Engine test stands and power check facilities, with or without sound suppression, are authorized for activities requiring jet engine test facilities.

Assumptions

Actual requirements may increase/decrease due to variations of local conditions.

Criteria

1 Pad for every 35 aircraft

58/35 = 1.66 pads, say 2 pads
Total Requirement = **2 EA**

211-89 - Power Check Pad w/out Sound Suppression

Description

Power Check facilities are required to test and adjust engines mounted in aircraft at locations where aircraft are permanently assigned and maintenance is performed. The Power Check Pad consists of portland cement concrete pavement with secure fittings, protection walls, and blast deflectors.

Criteria

1 Pad per 35 assigned aircraft

58/35 = 1.66 pads, say 2 pads
Total Requirement = **2 EA**

217-10 - Electronics/Communications Maintenance Shop

Description

Electronic Maintenance Shops provide maintenance and repair of non-airborne equipment .

Assumptions

Based on previous experience with similar conditions.
Actual requirements may increase/decrease due to variations of local conditions.

Criteria

Fixed allowance of 3,000 SF should be adequate
Total Requirement = **3,000 SF**

218-60 - Ground Support Equipment Shop

Description

Ground Support Equipment (GSE) shops provide space for intermediate level maintenance of aircraft. GSE includes such items as tow tractors, trucks, fork lifts, trailers, compressors, power generators, maintenance stands, jacks, and other ground equipment which support aircraft operations.

Assumptions

Used Table 218-60 in the NAVFAC P-80.
Size based on 47 on-board aircraft (80% of 58 assigned aircraft).

Criteria

Total Requirement = **6,250 SF**

218-61 - Ground Support Equipment Holding Shed

Description

The GSE Shed is planned in conjunction with the GSE shop (CCN 218-60). The Shed provides shelter for GSE equipment awaiting and undergoing intermediate level maintenance.

Assumptions

Used Table 218-61 in NAVFAC P-80.
Based on 47 on-board aircraft (80% of 58 assigned aircraft).

Criteria

No. of Aircraft	47 EA
Shed Area	9,750 SF

Total Requirement = **9,750 SF**

411-82 - Contaminated Fuel Storage

Description

This storage facility provides temporary storage for contaminated fuel.

Assumptions

Based on previous experience with similar conditions.
Actual requirements may increase/decrease due to variations of local conditions.

Criteria

Oily water - 1 Tank
Used Oil - 1 Tank
Mixed Oil - 1 Tank
(Sized to be determined)

Total Requirement = **3 EA**

441-10 - General Warehouse

Description

The General Warehouse provides shelter for bulk and bin storage, aisle space, space for receiving, packing and crating, office space for direct warehouse supervision (non-administration), and miscellaneous support space.

Assumptions

Proposed 58 A-4s.
Actual requirements may increase/decrease due to variations of local conditions.

Criteria

407 SF per aircraft
58 SF allowed per aircraft
58 x 407 SF = 23,606 SF
Total Requirement = **23,606 SF**

441-30 - Hazardous/Flammable Storehouse

Description

Hazardous and Flammable Storehouses function as general warehouses except provisions are made to ensure removal of evaporated and gaseous fumes through ventilation in accordance with National Fire Prevention Association Standard No. 30.

Assumptions

Based on 58 A-4s

Criteria

10% of general warehouse, general storage shed, and open space.

(23,606 SF + 464 SF + 6,670) x 10% = 3,074 SF
Total Requirement = **3,074 SF**

441-35 - General Storage Shed

Definition

A General Storage Shed is a covered structure without full side walls and/or end walls. Structures may or may not be sprinkled and/or have alarm systems.

Assumptions

Proposed 58 A-4s
Actual requirements may increase/decrease due to variations of local conditions.

Criteria

8 SF per aircraft
58 x 8 SF = 464 SF
Total Requirement = **464 SF**

451-10 - Open Storage Area

Description

The Open Storage Areas includes space designated for historical/planned material tons (M/Ts) of material to be stored or preparing to be stored.

Assumptions

Proposed 58 A-4s
Actual requirements may increase/decrease due to variations of local conditions.

Criteria

115 SF per aircraft
58 x 115 SF = 6,670 SF
Total Requirement = **6,670 SF**

610-10 - Administrative Office

Description

These offices provide space for executive and staff activities. Administrative Offices conduct logistical and personnel management, differing from tactical and strategic activities. Staff offices provide operational services.

Assumptions

50 personnel based from general allowances of similar facilities.
Actual requirements may increase/decrease due to variations of local conditions.

Criteria

150 SF times the number of assigned personnel (PN)

150 SF x 50 PN = 7,500 SF
Total Requirement = **7,500 SF**

APPENDIX C

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APPENDIX C

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