

**Development Concepts
D. and Alternatives Analysis**

**Master
Plan**

**Nephi
Municipal Airport**

D. Development Concepts and Alternatives Analysis

INTRODUCTION. The purpose of this chapter is to present the Development Plan Alternatives and/or Recommendations for Nephi Municipal Airport in terms of both their concept and reasoning. Therefore, several basic assumptions have been established, which are intended to direct the future development and maintenance of the Airport. These assumptions are supported by the aviation activity forecasts and include a commitment for continued airport development, which supports the economic development needs of the region.

Development Assumptions

Assumption One. The Airport will be developed and operated in a manner that is consistent with local ordinances and codes, federal and state statutes, federal grant assurances, and Federal Aviation Administration (FAA) regulations.

Assumption Two. This assumption recognizes the role of the Airport. The Airport will continue to serve as a facility that primarily accommodates general aviation activity, with a special focus on increased use by business jet aircraft. Scheduled passenger service activity does not occur at the Airport presently and is not presently anticipated in the future.

Assumption Three. The third assumption states that the existing visual approaches to Runway 17/35 will be evaluated for future instrument approach upgrades, in consideration of the potential runway extension and the existing ARC C-II design standards.

Assumption Four. The fourth assumption states that the landside development potential of the Airport's east side will be maximized, through infill development prior to initiating development on the northeast and southeast areas of the Airport.

Assumption Five. The fifth assumption focuses on the relationship of the Airport to off-airport land uses and the compatible and complementary development of each. This is inherent in the design considerations and placement of facilities so as to complement, to the maximum extent possible, off-

airport development, and to ensure the continued compatibility of the airport environs with the operation of the Airport.

Goals for Development

Accompanying these assumptions are several goals, which have been established for purposes of directing the plan and establishing continuity in the future development of the Airport. These goals take into account several categorical considerations relating to the needs of the facility, both in the short-term and the long-term, including safety, noise, capital improvements, land use compatibility, financial and economic conditions, public interest and investment, and community recognition and awareness. While all are project-oriented, some obviously represent more tangible activities than others; however, all are deemed important and appropriate to the future of the Airport.

The following goals are intended to guide the preparation of this Airport Master Plan, and direct the future development of Nephi Municipal Airport:

- **Plan the Airport to safely accommodate the forecast aircraft fleet, with facilities properly sized to accommodate the projected forecast demand.**
- **Program facilities to be constructed when demand is realized (construction is to be driven by actual demand, not forecast demand).**
- **Ensure that the future development of the Airport will continue to accommodate a variety of general aviation activities, ranging from small general aviation users to small corporate aviation operators.**
- **Enhance the self-sustaining capability of the Airport and ensure the financial feasibility of all future development.**
- **Develop land acquisition priorities (i.e., fee simple and/or easement), if necessary, related to airport safety, future airport development, and land use compatibility.**
- **Encourage the protection of existing public and private investment in land and facilities, and advocate the resolution of any potential land use conflicts, both on and off airport property.**
- **Plan and develop the Airport to be environmentally compatible with the community and minimize environmental impacts on airport property.**
- **Plan and develop/expand utilities/infrastructure to support airport tenants and users.**
- **As development continues, plan for expanded snow removal and infrastructure maintenance.**
- **Provide effective direction for the future development of the Airport through the preparation of a rational plan and adherence to the adopted development program.**

Airside & Landside Development Concepts

Introduction

Various development options have been identified for evaluation and are presented in the following development plan analysis. It is important to note that a final recommended Conceptual Development Plan will be prepared based on the analysis of these planning issues, and the recommended plan will likely represent a combination of the various development concepts presented. However, prior to the presentation of the various development options, a listing of the key airport airside and landside planning issues for the runway has been generated, and is presented in the following text:

Airside Planning Issues

- **ARC Dimensional Criteria**
- **Runway Dimensions**
- **Parallel Taxiway System**
- **Pavement Strength**
- **Instrument Approach Criteria**
- **Runway Lighting & Navigational Aids**

Airside Alternatives

To accommodate the projected operational demand at Nephi Municipal Airport through the year 2028 (i.e., the end of the 20-year planning period), various airside and landside planning alternatives will be examined relative to the previously specified planning issues. Both the forecast operations and the goals of the Nephi City, relative to aviation development and economic enhancement, have been incorporated into this planning effort.

Based upon the environmental information previously identified in the *Inventory of Existing Conditions* chapter, a brief summary of potential key environmental impacts related to the alternatives will be provided. This review of potential environmental impacts will assist the Airport Sponsor with the selection of a recommended alternative that can be supported by the FAA during the future National Environmental Policy Act (NEPA) study process. In addition, a graphic summary of the selected planning recommendations for Nephi Municipal Airport is presented in Figure D12, entitled *CONCEPTUAL DEVELOPMENT PLAN*, located at the end of this chapter.

ARC Dimensional Criteria

As presented in the previous chapter, Runway 17/35 is currently designed in accordance with Airport Reference Code (ARC) C-II design criteria, as specified by the FAA. These are the standards that apply to the “Design Aircraft”, in consideration of wingspan and approach speed, which currently utilizes this runway or that are projected to utilize this runway in the future.

As presented in the previous chapter, the Airport meets or exceeds all of the ARC C-II design standards for the existing runway and parallel taxiway system, which include the existing Runway Safety Area (RSA) and Runway Object Free Area (ROFA) design standards. Based upon the Airport’s existing and projected operational activity, the ARC C-II design standard is the appropriate dimensional criteria designation for this runway.

Therefore, the Airport Sponsor has elected to maintain the existing application of the ARC C-II design criteria, as illustrated in the previous chapter, and these standards will be depicted on the Conceptual Development Plan for the Airport.

Runway Dimensions

The existing Runway 17/35 length of 6,298 feet is adequate in accommodating 95% to 100% of the small aircraft fleet (i.e., aircraft with more than 10 seats), as specified by the FAA Airport Design program in consideration of the Airport’s elevation, design temperature, and runway elevation differential. In consideration of larger aircraft (i.e., aircraft weighing between 12,500 pounds and 60,000 pounds) it should be noted that this family of aircraft could potentially be restricted at times from operating at the Airport at longer stage lengths due to the additional fuel requirements requiring heavier operating weights.

As noted in the *1995 ALP Update*, the preparers and City Staff also recognized the importance of preserving the ability to construct additional runway length in the future to better accommodate the operation of more demanding business jet aircraft. Therefore, the previously programmed 900-foot runway extension to the south will be maintained to provide for an ultimate runway length of 7,200 feet. This future extension will accommodate approximately 75% of the aircraft fleet weighting between 12,500 pounds and 60,000 pounds at a 60% useful load, as well as some larger aircraft weighing in excess of 60,000 pounds.

Parallel Taxiway System

Runway 17/35 is equipped with an existing parallel taxiway system (i.e., Taxiway “A”), which serves the east side of the runway. In addition, Medium Intensity Taxiway Lights (MITLs), which are

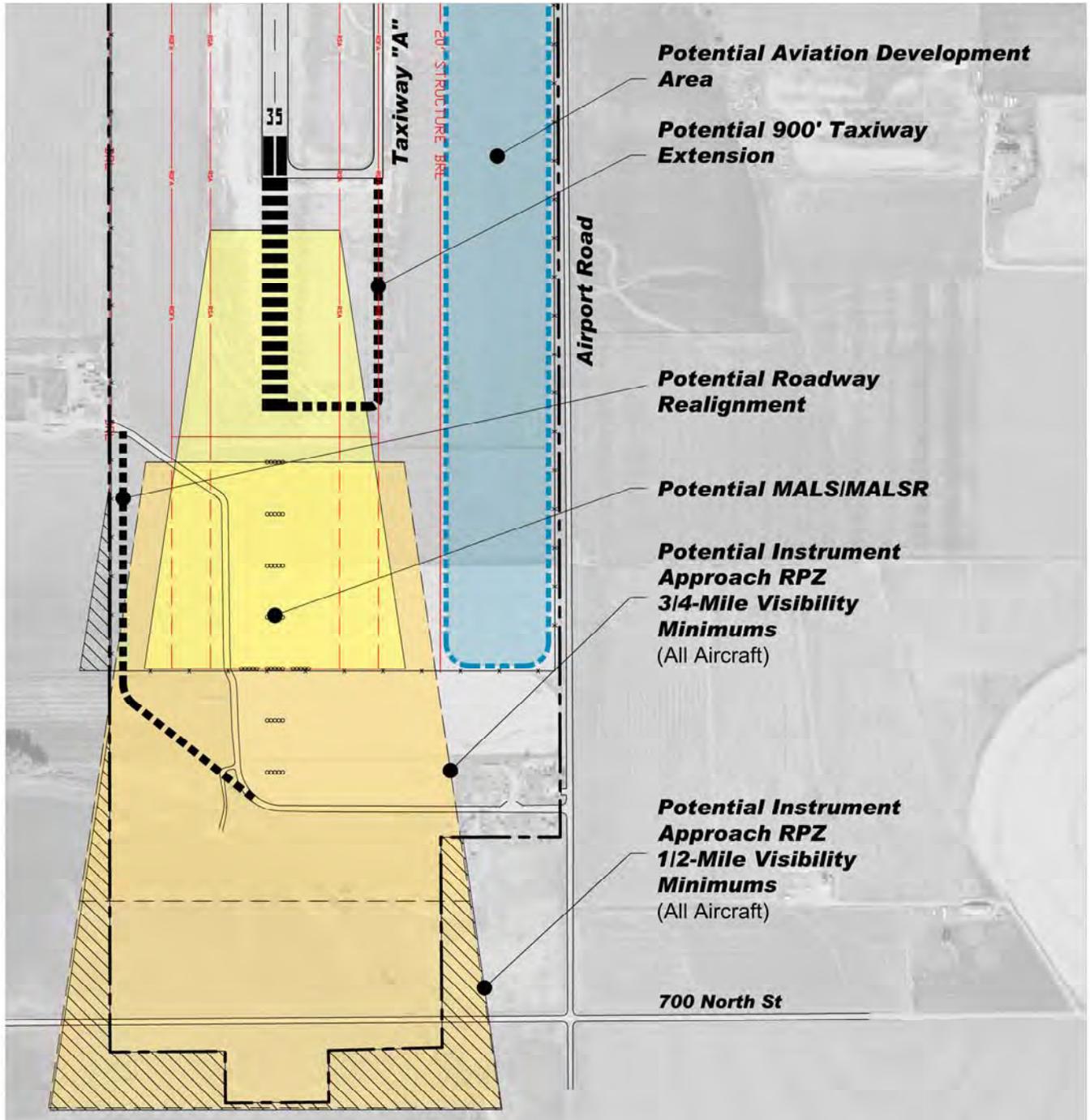
presently in place on Taxiway “A”, should also be maintained. The existing taxiway system has been evaluated with respect to existing and future departure ends of the runway. Every effort should be made to physically separate the airport roadways from taxiways, to prohibit unauthorized vehicles from accessing the Airport’s aircraft movement areas, which will assist in the safety and security monitoring of the Airport.

Due to the fact that all the Airport’s existing aviation development is located on the east side of the runway, the following options for future taxiway development have been identified.

Option One: This alternative recommends the previously programmed 900-foot extension to the south of the east side parallel taxiway (Taxiway “A”), in conjunction with the future runway extension. This alternative also recommends the construction of a connector taxiway, extending to the west from the Runway 17 threshold and providing access to the proposed Army National Guard development area.

Option Two: As with Option One, this alternative recommends the future 900-foot extension of Taxiway “A” to the south in conjunction with the future runway extension. Additionally, this alternative recommends the construction of a partial parallel taxiway, located 400 feet west of the runway centerline, connecting the Runway 17 threshold to the midfield connector taxiway. This partial parallel taxiway would provide airside access from the west side of the Airport, and specifically to accommodate the future needs of the Army National Guard and other potential aviation or aviation-related development within the northwest quadrant of the Airport.

The following illustrations presented below depict the various taxiway development options described above. Based upon the long-term development plans for the northwest quadrant of the Airport, the Airport Sponsor has selected the partial parallel taxiway development recommendations presented in Option Two for inclusion on the Conceptual Development Plan.

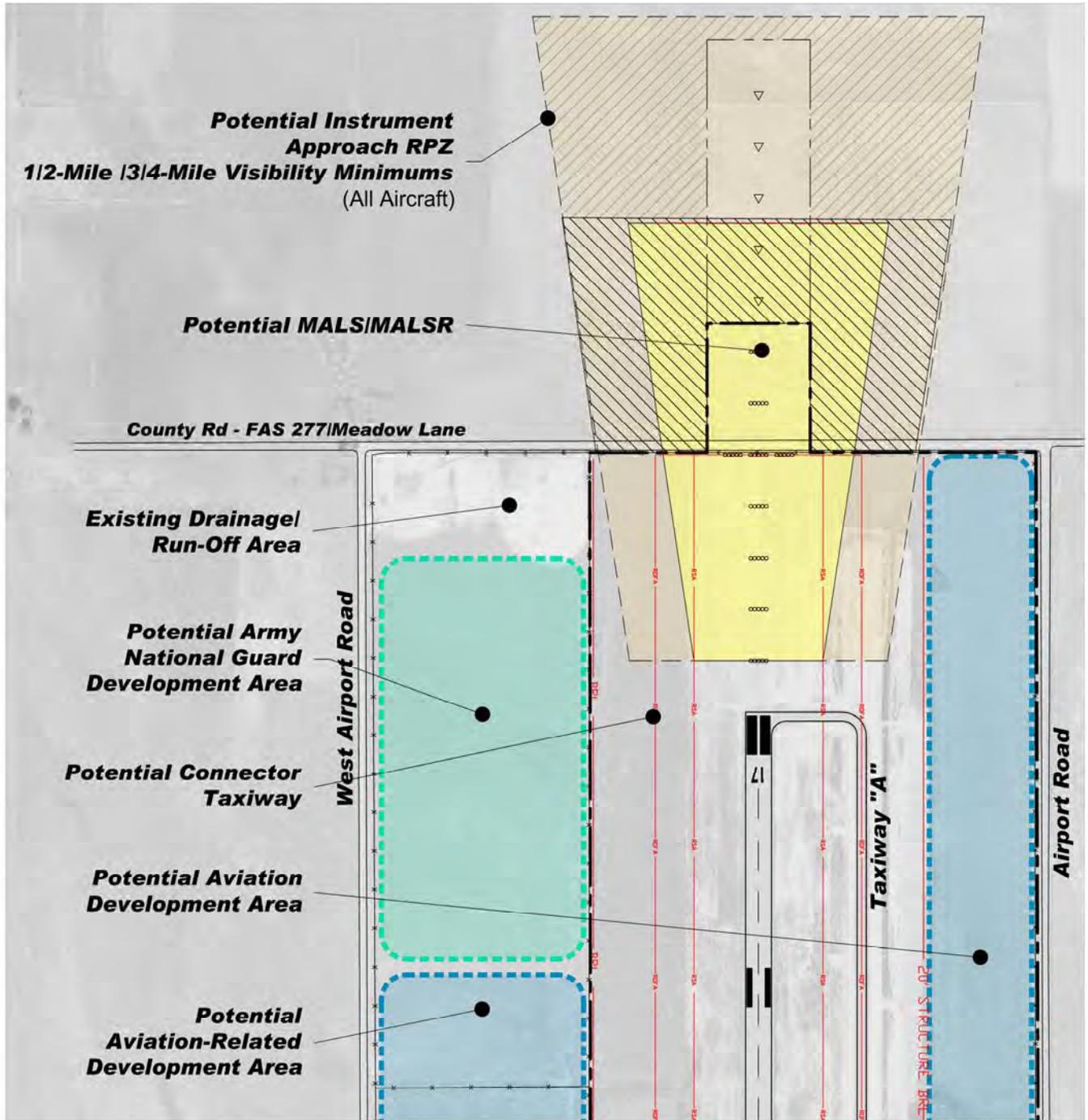


- Existing Property Line** **Existing Avigation Easement**
- Existing RPZ** **Existing Fencing**
- Potential RPZ**



Figure D1 Option One & Two Taxiway "A" Extension

SOURCE: Base drawing prepared by Barnard Dunkelberg & Co. using "as-built" construction drawings by Creamer & Noble Engineers, 2007.

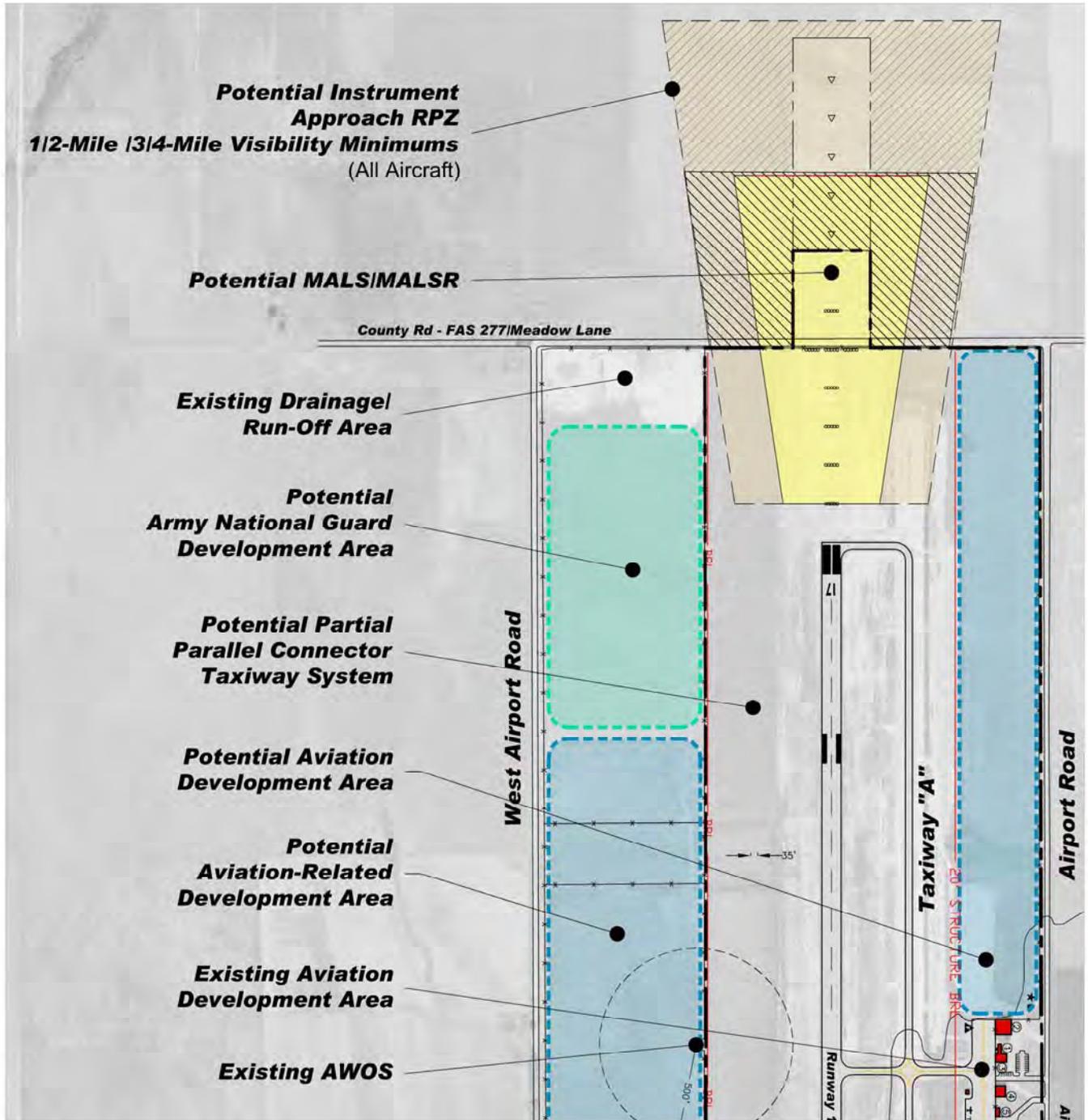


- | | |
|--|--|
|  Existing Property Line |  Existing Aviation Easement |
|  Existing Fencing |  Future Aviation Easement |
|  Existing RPZ |  Potential RPZ |



Figure D2 Option One/West Side Taxiway Connector

SOURCE: Base drawing prepared by Barnard Dunkelberg & Co. using "as-built" construction drawings by Creamer & Noble Engineers, 2007.



- Existing Property Line
- Existing Aviation Easement
- Existing Fencing
- Future Aviation Easement
- Existing RPZ
- Potential RPZ



Figure D3 Option Two/West Side Partial Parallel Taxiway

SOURCE: Base drawing prepared by Barnard Dunkelberg & Co. using "as-built" construction drawings by Creamer & Noble Engineers, 2007.

Pavement Strength

Runway 17/35 is constructed of asphalt and has a published gross weight bearing capacity of 21,000 pounds single wheel, and 30,000 pounds dual wheel main landing gear configuration. In addition, a runway overlay project was completed in 2003; however, all existing airfield pavement should be tested periodically to properly ascertain existing pavement strengths. In consideration of the projected operational fleet mix, the Sponsor has elected to maintain the existing runway pavement strength, and this decision will be reflected on the Conceptual Development Plan for the Airport.

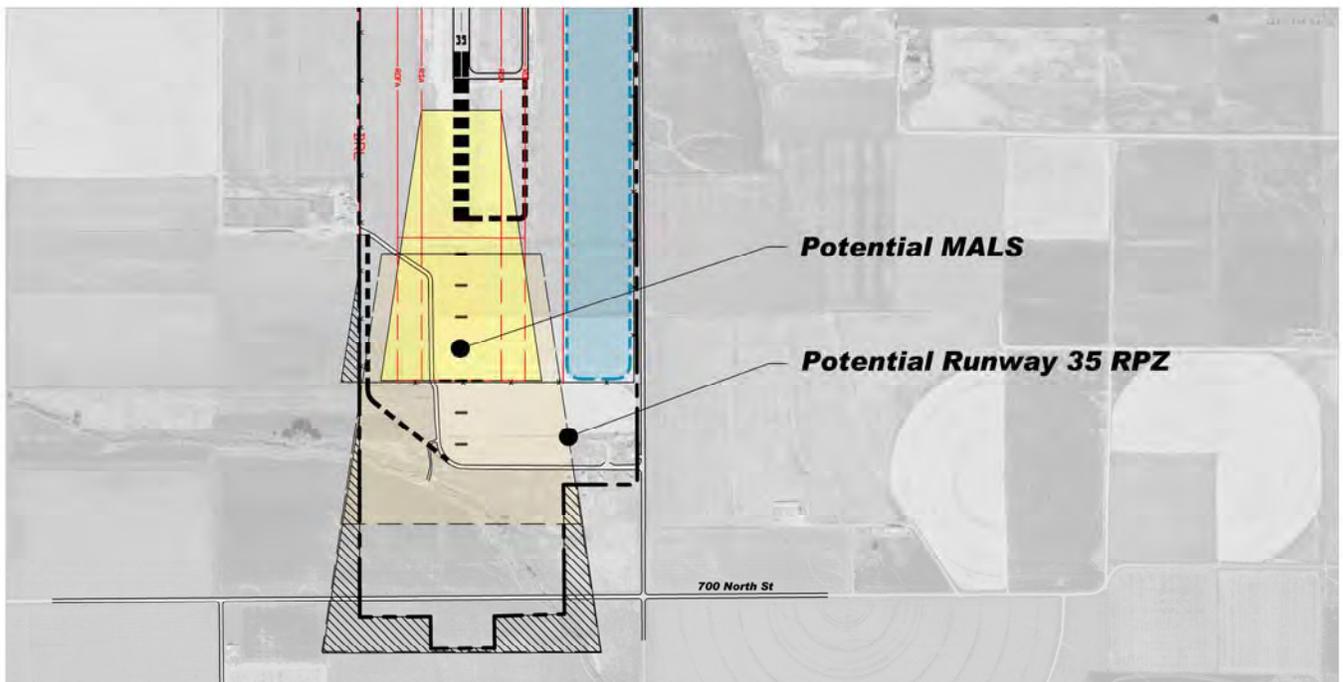
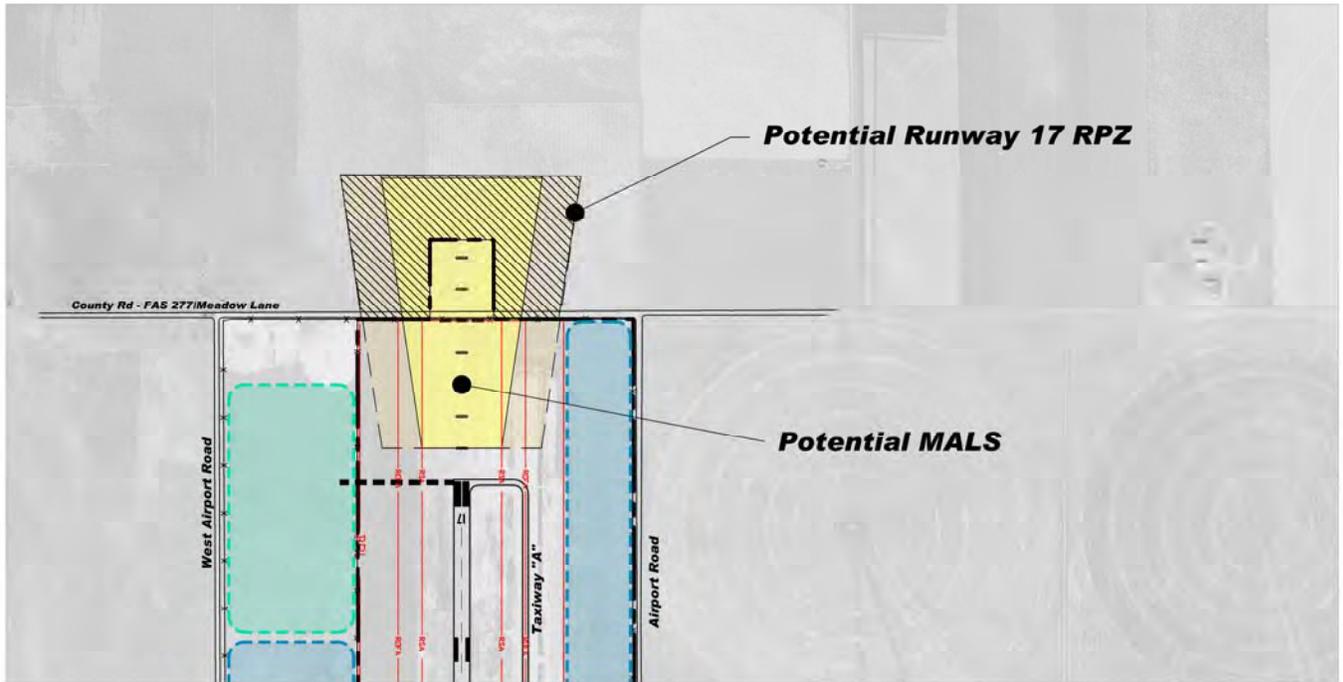
Instrument Approach Criteria

There are currently no instrument approach procedures at Nephi Municipal Airport. However, as previously identified in the *Capacity Analysis and Facility Requirements* chapter, it is recommended that both ends of Runway 17/35 be protected for an instrument approach procedure with vertical guidance (APV). It should also be noted that the feasibility of implementing a future instrument approach procedure and a determination of the visibility minimums that can be achieved for each runway end will be based on several factors, but dictated primarily by the surrounding terrain in the area.

Option One: This alternative recommends protecting for a future GPS instrument approach procedure with vertical guidance, providing not lower-than $\frac{3}{4}$ -mile visibility minimums (all aircraft) for each runway end. No additional property or easement acquisition would be required to accommodate the required larger Runway Protection Zones (RPZs).

Option Two: This alternative recommends protecting for a future GPS instrument approach procedure with vertical guidance, providing $\frac{1}{2}$ -mile visibility minimums (all aircraft) to each runway end. No additional property or easement acquisition would be required to accommodate the required approach lighting system or larger Runway RPZ on the Runway 35 end. However, approximately 10.1 acres of land acquisition would be required to accommodate the future Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) light lane, with an easement acquisition of approximately 22.9 acres being required to accommodate the balance of the future RPZ.

Based upon a desire to preserve future instrument approach development capabilities for the Airport, offering visibility minimums as low as $\frac{1}{2}$ -mile, and a goal to better accommodate the small to medium sized business jet fleet on this runway, the Sponsor has elected to protect for the future instrument approach procedures (IAPs) described by Option Two. These future IAPs will be depicted on the Conceptual Development Plan for the Airport.

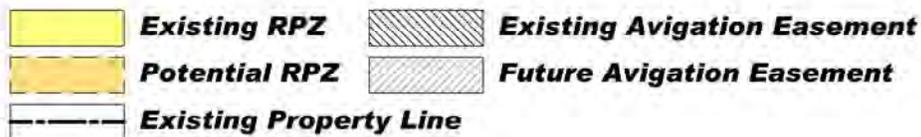
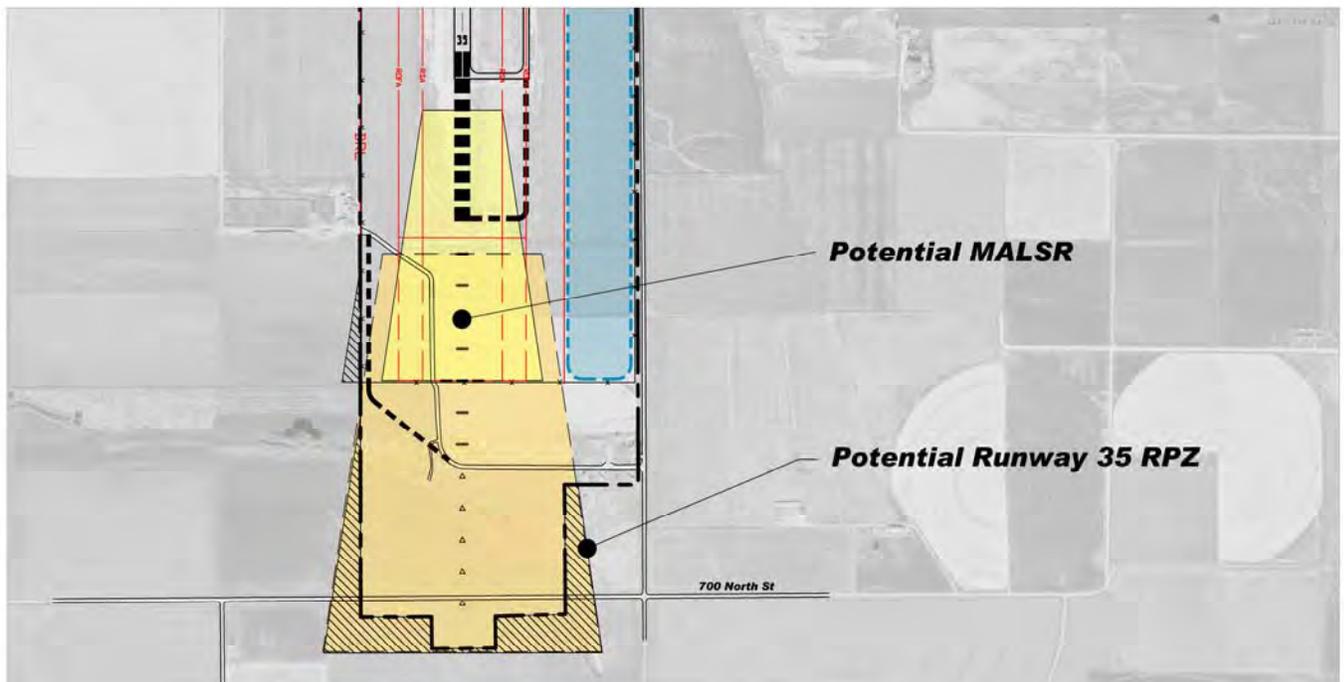
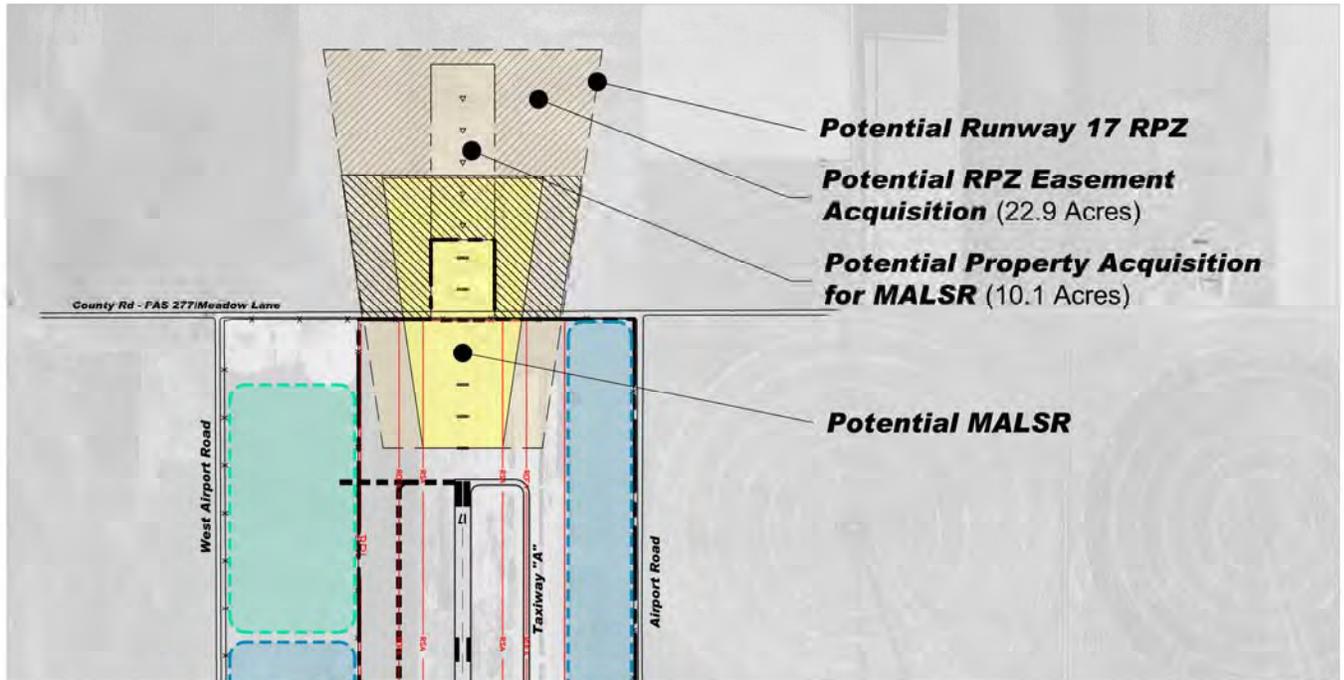


- Existing RPZ
- Potential RPZ
- Existing Avigation Easement
- Existing Property Line



Option One/Runway 16 & 34 Instrument Approach
Figure D4 Procedure Development (3/4-Mile Visibility Minimums)

SOURCE: Base drawing prepared by Barnard Dunkelberg & Co. using "as-built" construction drawings by Creamer & Noble Engineers, 2007.



**Option Two/Runway 17 & 35 Instrument Approach
Figure D5 Procedure Developemnt (1/2-Mile Visibility Minimums)**

SOURCE: Base drawing prepared by Barnard Dunkelberg & Co. using "as-built" construction drawings by Creamer & Noble Engineers, 2007.

Runway Lighting & Navigational Aids

Presently, the runway at Nephi Municipal Airport is equipped with Medium Intensity Runway Lights (MIRLs), with both Precision Approach Path Indicators (PAPIs) and Runway End Identifier Lights (REILs) serving each runway end. The MIRLs should be maintained in conjunction with the existing/proposed instrument approach procedures.

Based upon the selected instrument approach procedure upgrade to each runway end, the following runway lighting and navigational aids modifications/upgrades have been identified:

- **Install future MALSR to each runway end (see Figure D5 for proposed layout of the approach lighting system).**
- **Extend existing MIRLs in conjunction with future 900-foot runway extension.**
- **Relocate Runway 35 PAPIs.**
- **Extend existing MITLs in conjunction with future 900-foot extension of Taxiway "A".**
- **Install MITLs in conjunction with future development of the west side partial parallel taxiway system.**

These runway lighting and navigational aids modifications/upgrades will be illustrated on Figure D12, entitled *CONCEPTUAL DEVELOPMENT PLAN*.

Landside Planning Issues

The key airport landside planning issues for the Airport have been generated, and are presented in the following text:

- **General Aviation Development**
- **Aviation-Related Development**
- **Airport Access Roadways**
- **Property/Easement Acquisition**
- **Support Facilities**

Landside Alternatives

General Aviation Development. In accordance with the forecast based aircraft counts and facility requirement projections that were presented in previous sections, it has been concluded that adequate future aviation-use development property is available on the east side of airport property to accommodate this projected aviation demand for the 20-year planning period of this study. Detailed general aviation development options have been prepared for the balance of the eastern portions immediately surrounding the existing aviation development areas of the Airport, with more generalized area planning boundaries being prepared for the long-term development being proposed for the northeast, southeast, and northwest quadrants of the Airport.

It should also be emphasized that the future development of aircraft storage facilities at the Airport will be demand dictated. Therefore, the number, size, and location of these hangars will vary depending on the demand for specific facilities, and the development plans must be flexible to accommodate a variety of user groups. In addition, there are important development guidelines that the Airport Sponsor should consider when making hangar placement determinations at the Airport. These include:

- **Each executive hangar should be supplied with taxiway access that is separated from automobile access and adjacent automobile parking. This is most efficiently accomplished when a row of hangars is developed and provided with taxiway access on one side and automobile access and parking on the other side.**
- **Each T-hangar should be nested and developed with taxiway access to both sides of the hangar. Controlled automobile access should be provided to the taxiway/apron area near the T-hangars, and a public access parking area should be provided near the T-hangar facilities to accommodate both users and visitors.**

It is most efficient to “double load” both the taxiway access and the automobile access routes with hangars. More specifically, the access taxiways/taxilanes are to be lined with hangars on both sides and the automobile roadways/parking areas are also to be lined with hangars on both sides. Typically, the airside spacing between the hangars is dictated by the clear width door design of the hangars, with a 79-foot Taxilane Object Free Area (TOFA) width being specified for Airplane Design Group (ADG) I aircraft, which compares to a 115-foot TOFA spacing for ADG II aircraft. In recent years, the FAA has limited funding participation on taxilanes to projects designed for ADG II aircraft. As shown in the following illustrations, ADG II TOFA design standards were applied to each landside alternative to comply with the FAA’s current project funding/eligibility requirements.

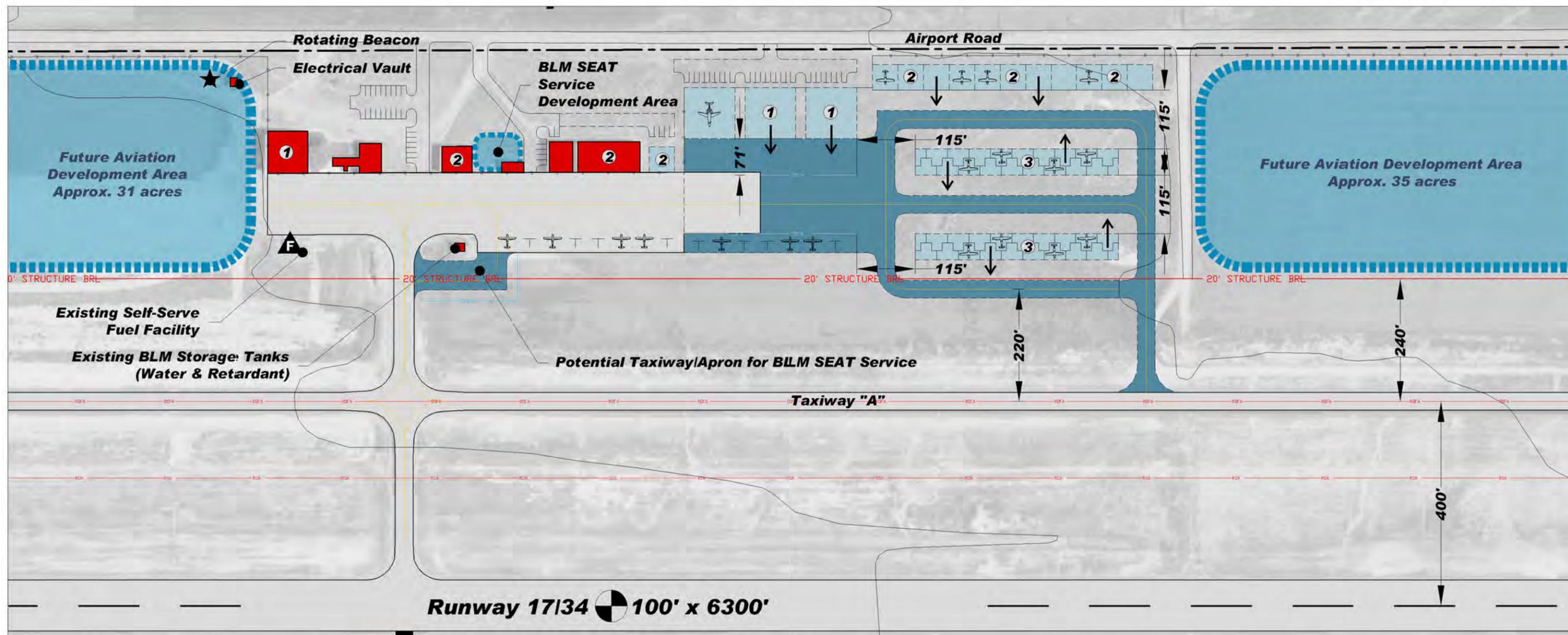
Based upon input received from the Airport Sponsor, and the projected aircraft storage improvements that will be needed to serve the aviation users, three hangar, apron, and access taxiway development alternatives have been prepared. They are described below and presented on the following detail illustrations.

Landside Alternative One

As with each of the landside alternatives, Landside Alternative One centralizes the landside development on the eastern portion of the Airport. Landside development would expand south from the existing aviation-use areas. On the existing apron, room is designated for one additional small executive hangar on the southeast portion of the existing apron, and an infill development site for a future Bureau of Land Management (BLM) Single Engine Air Tanker (SEAT) facility has been identified near the midway point of the existing apron. Automobile access and parking would be extended behind the existing apron from the existing southernmost airport entrance road.

Landside Alternative One also recommends the extension of the existing apron to the south, utilizing ADG II TOFA design standards. This extended apron area would provide space for seven additional tiedown spaces and three large corporate/Fixed Base Operator (FBO) hangar facilities. Automobile access would be provided directly from Airport Road, and automobile parking would be located immediately east of the large hangar facilities. From the extended apron, three taxilanes would extend south to a new east-west connector taxiway that would provide direct access to Taxiway "A". Within the three taxilanes, room is reserved for two rows of nested T-hangars (approximately 18-units in each), and one row of small executive hangars (approximately 11 total).

Additionally, Landside Alternative One recommends the construction of a small apron/taxilane extending southward from the midfield taxiway, adjacent to the existing BLM storage tanks, to allow for more convenient, efficient access to the storage tanks and minimizing traffic congestion on the existing apron. Additional land to the north of the existing landside development area reserves approximately 31 acres for future aviation development, while land to the south reserves approximately 35 acres for future aviation development needs. Landside Alternative One is illustrated in the following figure.



- ① **FBO/Corporate Hangar** **Existing Structure to Remain** **Existing Airfield Pavement**
- ② **Executive Hangar** **Future Buildings** **Future Airfield Pavement**
- ③ **T-Hangar**

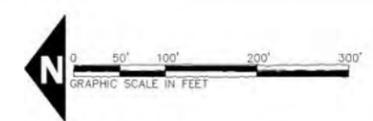


Figure D6 Landside Alternative One

SOURCE: Base drawing prepared by Barnard Dunkelberg & Co. using "as-built" construction drawings by Creamer & Noble Engineers, 2007.

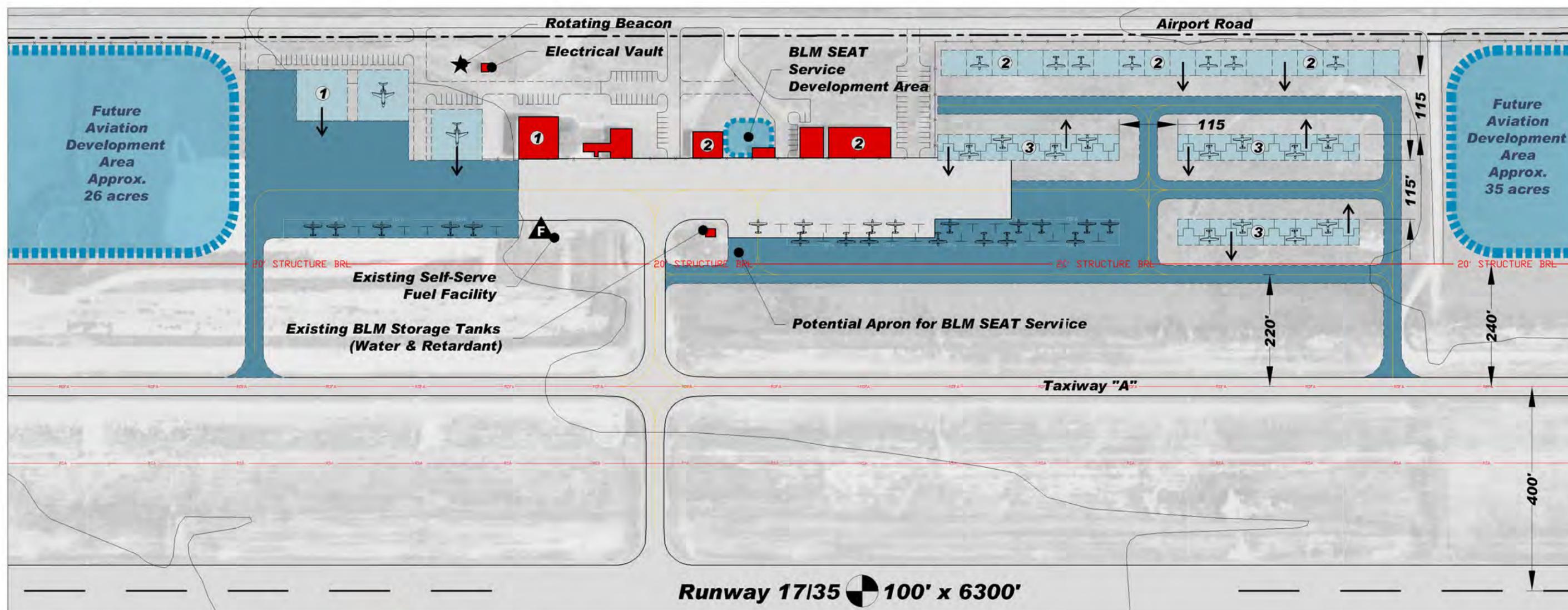
Landside Alternative Two

For Landside Alternative Two, development would expand north and south from the existing aviation-use areas, utilizing ADG II TOFA design standards. The north extended apron would reserve space for three large/FBO corporate hangars, as well as nine tiedown positions. A connecting taxiway would be located on the north side of this apron, providing direct access to Taxiway “A”.

Automobile access to the north apron area would be provided by two new entrance roads extending from Airport Road, on the northeast side of the apron. These new access roads would link to new automobile parking areas east of the hangar facilities, as well as connect to existing airport entrance roads.

This alternative also recommends the expansion of the existing apron to the west and south, which could potentially provide approximately 29 tiedown positions. The extended southwest apron transitions into three taxilanes, extending south to an east-west connector taxiway that would provide access to Taxiway “A”. Within the three taxilanes, space is reserved for three rows of nested T-hangars (each accommodating approximately 16-units), and one row of small executive or shade hangars (approximately 18 total). An additional access road extending from Airport Road, with automobile parking, would connect with the southeast portion of the existing apron, providing automobile access and parking availability to both existing and future aviation-use facilities within this portion of the landside development area.

Additionally, Landside Alternative Two recommends the construction of additional apron located west of the BLM storage tanks, connecting to the extended southwest taxilane and apron. This would reduce traffic congestion on the existing apron and allow for more efficient access to the storage tanks. Remaining land to the north of the existing/future landside development in this alternative reserves approximately 28 acres for future aviation development, while the remaining land to the south reserves approximately 35 acres for future aviation development needs. Landside Alternative Two is illustrated in the following figure.



- ① **FBO/Corporate Hangar** **Existing Structure to Remain** **Existing Airfield Pavement**
- ② **Executive Hangar** **Future Buildings** **Future Airfield Pavement**
- ③ **T-Hangar**

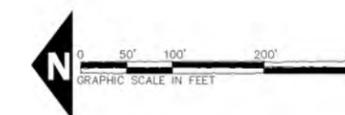


Figure D7 Landside Alternative Two

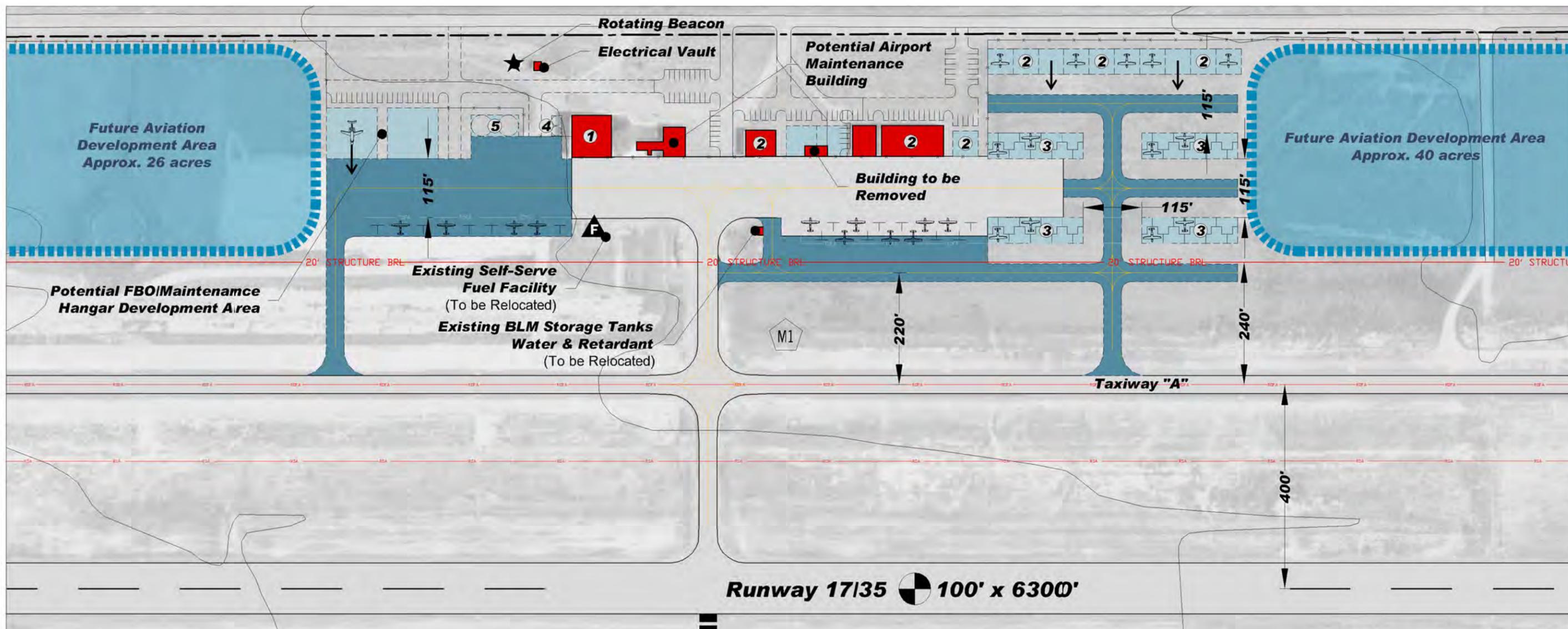
SOURCE: Base drawing prepared by Barnard Dunkelberg & Co. using "as-built" construction drawings by C'reamer & Noble Engineers, 2007.

Landside Alternative Three

Landside Alternative Three also expands development north and south from the existing aviation-use areas, utilizing ADG II TOFA design standards. The extended north apron area would reserve space for two large FBO/corporate hangars, as well as nine tiedown positions. A connecting taxiway would be located on the north side of this apron, providing direct access to Taxiway “A”. Automobile access would be provided by two new access roads. The first would extend westward from Airport Road, with the second extending to the south and connecting to the existing airport entrance roads. Each would provide access to automobile parking adjacent to the new hangar facilities.

Infill development is recommended along the existing apron, with space being reserved for three additional executive hangars. Automobile access and parking would be expanded in this area along the backside of the hangars, including the development of a new airport access/entrance road connecting with Airport Road. This alternative also recommends the construction of a new connector taxiway that would extend from Taxiway “A”, and connect with three north-south taxilanes located south of the existing apron. These taxilanes would serve four rows of eight-unit nested T-hangars, as well as reserve space for approximately ten small executive hangars positioned alongside the right-of-way to Airport Road.

With respect to airport support facilities, this alternative reserves space near the northeast corner of the existing general aviation ramp for the future relocation of the Airport’s self-serve fueling facility and BLM water and retardant storage tanks. In addition, undeveloped property to the north of the existing landside development area reserves approximately 26 acres for future aviation development, while the undeveloped property to the south reserves approximately 40 acres for future aviation development needs. Landside Alternative Three is illustrated in the following figure.



- ① FBO/Corporate Hangar
- ② Executive Hangar
- ③ T-Hangar
- ④ Future BLM Storage Tanks
- ⑤ Future Self-Serve Fuel Facility

Existing Structure to Remain

Future Buildings

Existing Airfield Pavement

Future Airfield Pavement

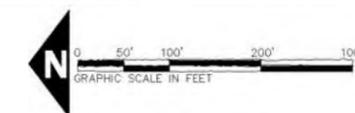


Figure D8 Landside Alternative Three

SOURCE: Base drawing prepared by Barnard Dunkelberg & Co. using "as-built" construction drawings by Creamer & Noble Engineers, 2007.

Following a thorough evaluation and input received from the Airport Sponsor of the three landside development alternatives presented above, it is recommended that portions of both Alternatives Two and Three, combined with additional reconfigurations of the landside development area be selected for a phased implementation. This selected landside development plan is presented as an element of the Conceptual Development Plan at the conclusion of this chapter (see Figure D12).

As shown on the Conceptual Development Plan, the small executive hangars (within the southeast general aviation development area) have been repositioned in a “back-to-back” configuration, with eight located alongside the right-of-way to Airport Road. Further, development infill alongside the southeast portion of the existing apron would provide approximately five additional tiedown spaces.

A development area is reserved specifically for the BLM SEAT Firefighting Base, located north of the east side GA development area. This would allow for infill development immediately south of the future relocated self-serve fueling facility, where space would be reserved for two additional small executive hangars. Further, a connecting taxiway from Taxiway “A” would provide direct access to the BLM SEAT apron area. Auto access and parking would be expanded to the BLM SEAT Firefighting Base development area east of the BLM SEAT apron area.

The Conceptual Development Plan also depicts an access taxiway connecting the north apron area to the BLM SEAT Firefighting Base development area. Ultimately, pavement infill development is recommended along both sides of this connecting taxiway for additional ramp/apron space.

Property/Easement Acquisition

Currently, the existing Runway Protection Zone (RPZ) dimension associated with Runway 17 that extends beyond the airport boundary and across County Road –FAS 277 is controlled by the Airport under an aviation easement. The existing RPZ for Runway 35 is located entirely on airport property. As noted previously, implementing a precision instrument approach to Runway 17 would require future land acquisition of approximately 10.1 acres, and easement acquisition of approximately 22.9 acres.

Aviation Support Facilities

Aviation support facilities are required for the Airport to operate properly, but are not part of the runway/taxiway system and do not relate directly to aircraft storage facilities. The support facilities

at Nephi Municipal Airport, which require development recommendations, include a new self-serve fueling facility, a new airport maintenance/storage building, and new infrastructure development.

Fuel Storage Facility. According to existing fuel storage and sales data, along with projected future storage requirements, it appears that the Airport's fuel storage requirements can be accommodated through the year 2028 utilizing existing storage facilities. However, a long-term development site has been identified near the northeast corner of the existing general aviation ramp for the future relocation of the Airport's self-serve fueling facility. The proposed site, which was identified on Figure D8, entitled *LANDSIDE ALTERNATIVE THREE*, would be designed to accommodate the above-ground storage of both Jet A fuel and AVGAS, as well as a designated self-serve fueling position on the apron that is positioned outside of the taxilane object free area. Landside access to the site would be provided via new roadways connecting to Airport Road.

Airport Maintenance Facility. Nephi City representatives have expressed a need for a dedicated maintenance/storage building to be located at the Airport. The primary function of the facility would be for the storage of snow removal and maintenance equipment that is used at the Airport. For airports such as Nephi that are located outside of the City limits and within the county jurisdiction, often times it makes sense for the City and County to collaborate on the development of a joint-use facility that is located on the Airport, but serves the needs of both entities. A possible development site for this facility was identified on Figure D8, entitled *LANDSIDE ALTERNATIVE THREE*, and is located at the site of the existing Quonset hangar, just north of the Airport's security gate entrance onto the general aviation ramp.

Airport Infrastructure Development. Future development of both aviation and/or aviation-related development areas (located adjacent to the northwest and east sides of the Airport) will require the extension of access roadways and utilities (e.g., electricity, natural gas, water, sanitary sewer, etc.). The projected cost of this infrastructure development, which includes design/engineering, will be incorporated into the future development costs for this area, and specific infrastructure projects will be identified in the 20-year development program for the Airport.

Aviation-Related Development

Utah Army National Guard Armory Development. The proposed development site for the armory is located on approximately 30 acres adjacent to the northwest quadrant of the Airport. A possible development scenario could include the relocation/dispersal of some of the aviation assets (i.e., a percentage of the of AH-64 Apache and/or UH-60 Blackhawk helicopters and their associated support functions) from Salt Lake City Airport II to Nephi Municipal Airport, which would provide an alternate basing/staging location for response to natural disasters and/or security threats. The new

Armory facility would likely necessitate the development of hangars, operations buildings, maintenance facilities, and various support facilities, as well as include FAA/Nephi City approval of a “Through-The Fence” operation/access agreement. Also, vehicular access to the Armory would be provided from the existing county road that parallels the northern boundary of the Airport.

Single-Engine Air Tanker (SEAT) Firefighting Base. The existing Single-Engine Air Tanker (SEAT) firefighting base is operated by the Bureau of Land Management (BLM) on an as-needed basis during the summer fire season from the general aviation apron, and managed from the existing office/building that is located along the flight line. The tanker aircraft will continue to be refueled on the Airport from the existing self-service fueling facility and re-loaded with water and/or retardant from two 6,000 gallon above-ground storage tanks that are located adjacent to the general aviation apron and central connector taxiway until these facilities are relocated to the future designated service/support area near the northeast corner of the existing general aviation ramp. In addition, the BLM has expressed some interest in establishing a permanent SEAT Base installation at the Airport that would likely be activated on a seasonal basis. Therefore, a potential SEAT Base development area will be identified on the east side of the Airport to accommodate their specified operational requirements, and several potential infill development sites are currently available for this purpose. It’s also recommended that a written operational/use agreement, with protocols, be established between Nephi City and the BLM for the use of the Airport during the summer fire season.

Potential Environmental Impacts

The key potential environmental impacts that should be taken into consideration prior to any future airport projects include the following:

- **Noise**
- **Hazardous wildlife attractants**
- **Air and water quality**
- **Historical, architectural, archaeological, and cultural resources**
- **Threatened and endangered species**
- **Wetlands**
- **Farmland**
- **Floodplains**
- **Section 4(f) Property**

The following descriptions briefly summarize these various environmental issues.

Noise

Computer Modeling. The DNL noise contours were generated using the Integrated Noise Model (INM) Version 7.0a, specifically developed by the Federal Aviation Administration (FAA) to plot noise contours for airports. The original version was released in 1977, with the current version being released in September of 2008. The program is provided with standard aircraft noise and performance data that can be tailored to the characteristics of individual airports.

The INM program requires the input of the physical and operational characteristics of the Airport. Physical characteristics include runway coordinates, airport elevation, and temperature. Operational characteristics include aircraft mix, flight tracks, and approach profiles. Optional data that is contained within the model include departure profiles, approach parameters, and aircraft noise curves. All of these options were incorporated in order to model the noise environment at the Nephi Municipal Airport.

Land Use Compatibility Matrix. The Land Use Compatibility Matrix, presented on the following figure, indicates those land uses that are compatible within certain DNL noise contours. It identifies land uses as being compatible, incompatible, or compatible if sound attenuated. The matrix, which was developed by the FAA, can act as a guide to Juab County for land use planning and control, and a tool to compare relative land use impacts that would result from various airfield planning alternatives. The DNL noise contours do not delineate areas that are either free from excessive noise or areas that will be subjected to excessive noise. In other words, it cannot be expected that a person living on one side of a DNL noise contour will have a markedly different reaction than a person living nearby, but on the other side. What can be expected is that the general aggregate community response to noise within the DNL 65 noise contour, for example, will be less than the public response from the DNL 75 noise contour.

This study generated the 60, 65, 70, and 75 DNL noise contours to determine land use compatibility. The immediate area outside the 65 DNL noise contour is an area within which most land uses are compatible, but is an area where single event noise complaints are often received. The area between the 65 and 70 DNL noise contours is an area of significant noise exposure where many types of land uses are normally unacceptable and where land use compatibility controls are recommended. Finally, the area inside the 70 and 75 DNL noise contours identifies land uses that are subjected to a significant level of noise and the sensitivity of various uses to noise is increased.

LAND USE	YEARLY DAY-NIGHT NOISE LEVEL (DNL) IN DECIBELS					
	BELOW 65	65-70	70-75	75-80	80-85	OVER 85
RESIDENTIAL						
Residential, other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
PUBLIC USE						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
COMMERCIAL USE						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail-building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade-general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
MANUFACTURING AND PRODUCTION						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing resource production and extraction	Y	Y	Y	Y	Y	Y
RECREATIONAL						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	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

Numbers in parentheses refer to NOTES.

The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

TABLE KEY

SLUCM	Standard Land Use Coding Manual.
Y(Yes)	Land Use and related structures compatible without restrictions.
N(No)	Land Use and related structures are not compatible and should be prohibited.
NLR	Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.
25, 30 or 35	Land Use and related structures generally compatible; measures to achieve NLR of 25, 30 or 35 dB must be incorporated into design and construction of structure.

NOTES

- (1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB to 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.
- (2) Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
- (3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
- (4) Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
- (5) Land use compatible provided that special sound reinforcement systems are installed.
- (6) Residential buildings require an NLR of 25.
- (7) Residential buildings require an NLR of 30.
- (8) Residential buildings not permitted.

Figure D9 Land Use Compatibility Matrix



Noise Analysis. In predicting the approximate noise impacts that could occur from the operation of Nephi Municipal Airport, several assumptions were made to estimate the number of operations, type of aircraft, and the airport configuration that would be most reasonable to model for the 2008 base year, and for the end of the planning period, year 2028. If FAA recommended land use development is strictly controlled within these contours, then most noise-related land use problems can be alleviated before they develop. However, this is not to say that the City would not receive noise complaints due to overflights by aircraft from well outside of the 65 DNL noise contour. The two sets of total operations, defined by aircraft type, which were used as a basis for generating the noise contours, are shown in the following table entitled *EXISTING AND FUTURE OPERATIONS BY AIRCRAFT TYPE, 2008 & 2028*.

Table D1
**EXISTING AND FUTURE OPERATIONS BY AIRCRAFT TYPE,
 2008 & 2028**

Operations by Type	2008	2028
<i>General Aviation</i>	<i>6,040</i>	<i>12,112</i>
Single Engine ⁽¹⁾	1,903	3,270
Multi-Engine	1,148	2,120
Turboprop	2,537	5,632
Business Jet	151	727
Helicopter	302	363
<i>Military</i>	<i>1,000</i>	<i>8,000</i>
Fixed Wing	0	0
Helicopter ⁽²⁾	1,000	8,000
TOTAL	7,040	20,112

Sources: Operational estimates generated by BARNARD DUNKELBERG & COMPANY using FAA Form 5010-1, *Airport Master Record*.

Notes:
⁽¹⁾ Includes single engine piston and turboprop operations.
⁽²⁾ Existing activity is represented by Utah National Guard helicopter touch-and-go training operations.

2008 Noise Contours. Using the existing 2008 aircraft operation base counts and types previously presented in Table D1, noise contours were generated and are presented in Figure D10, entitled *2008 EXISTING DNL NOISE CONTOURS WITH GENERALIZED EXISTING ZONING*. As can be seen in the illustration, each of the generated DNL noise contours is contained on airport property and,

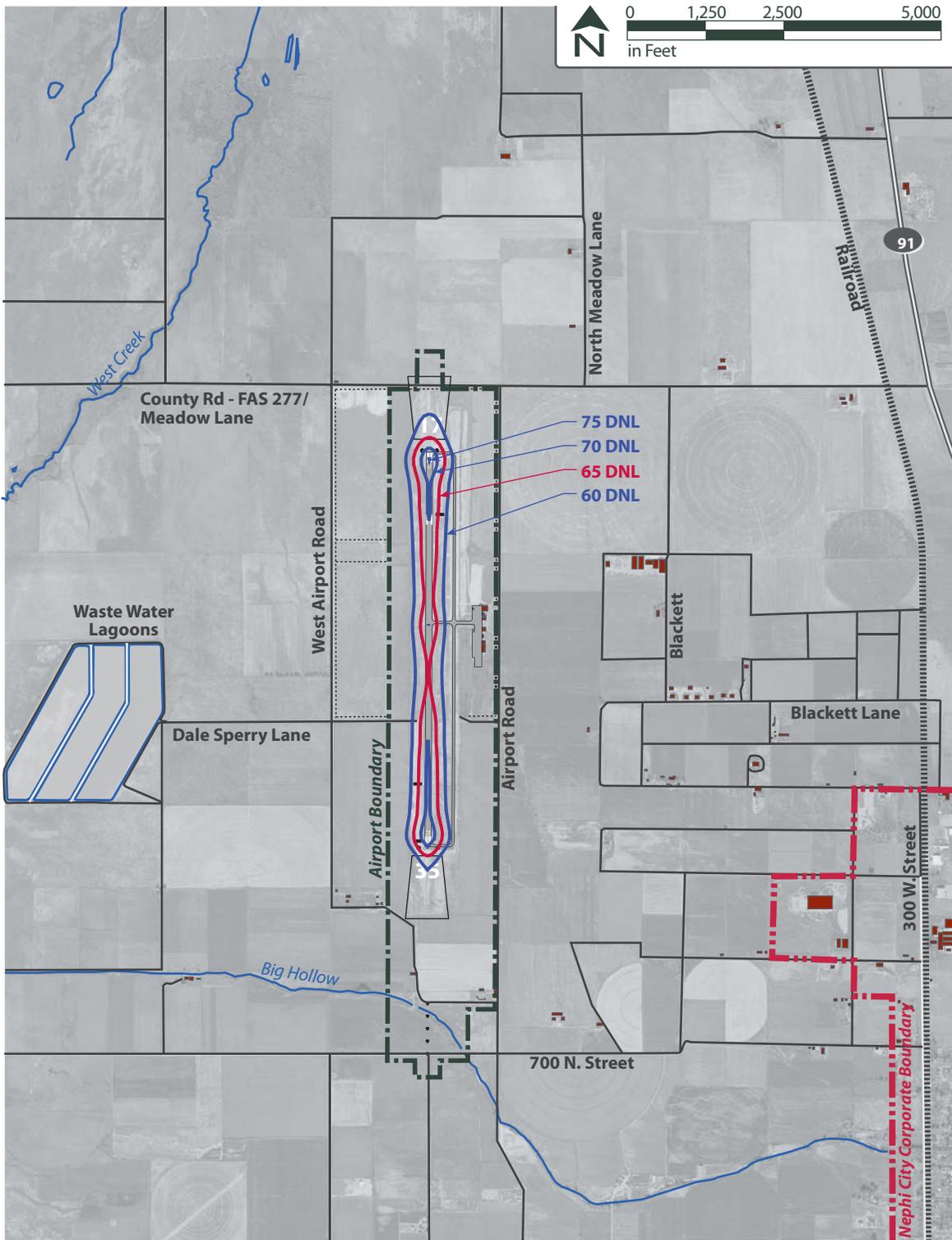


Figure D10 2008 Existing DNL Noise Contours with Generalized Existing Zoning

therefore, no existing noise sensitive land uses are contained within the contours¹. As delineated, the 75 DNL noise contour encompasses less than one acre, the 70 DNL noise contour encompasses 6.9 acres, the 65 DNL noise contour encompasses 39.0 acres, and the 60 DNL noise contour encompasses 87.2 acres.

2028 Noise Contours. The 2028 aircraft operation counts and types, presented in Table D1, were used to generate the noise contours that are illustrated in Figure D11 entitled *2028 FUTURE DNL NOISE CONTOURS WITH GENERALIZED EXISTING ZONING*. In comparison with the 2008 contours, the 2028 noise contours are very similar in shape, but larger, with the footprint is slightly broadened near the runway ends due to the projected increase in aircraft operations. As with the 2008 baseline contours, the DNL noise contours are contained on airport property and, therefore, no existing noise sensitive land uses are contained within the contours. As delineated, the 75 DNL noise contour encompasses 2.3 acres, the 70 DNL noise contour encompasses 22.9 acres, the 65 DNL noise contour encompasses 75.8 acres, and the 60 DNL noise contour encompasses 156.1 acres.

Nationally, the aircraft fleet, particularly the jet fleet, is becoming quieter. The majority of the business jet aircraft that produce the greatest noise levels will, by age, be removed from service during the 20-year planning period on which this study is based. In addition, the National Business Aviation Association (NBAA) passed a voluntary resolution to eliminate the operation of all Stage 1 business jets in 2005, and all newly manufactured business jets comply with Stage 3 noise reduction criteria. For propeller driven aircraft, propeller upgrades are available for some of the general aviation fleet to reduce noise, and some general aviation aircraft manufacturers are opting to utilize de-rated engines in their aircraft, which allow engine operation at lower revolutions per minute (RPMs) to achieve improved noise reduction levels.

As can be seen from the existing and future noise contours generated for this Master Plan, the projected increase in operations at the Airport through the 20-year planning period does result in a larger contour footprint. The projected 2028 noise contours would continue to be contained entirely on existing airport property, and thus result in no impacts to existing noise sensitive land uses.

¹ 2008 and 2028 Integrated Noise Model (INM) Noise Contour Data for Nephi Municipal Airport is included in Appendix Five.

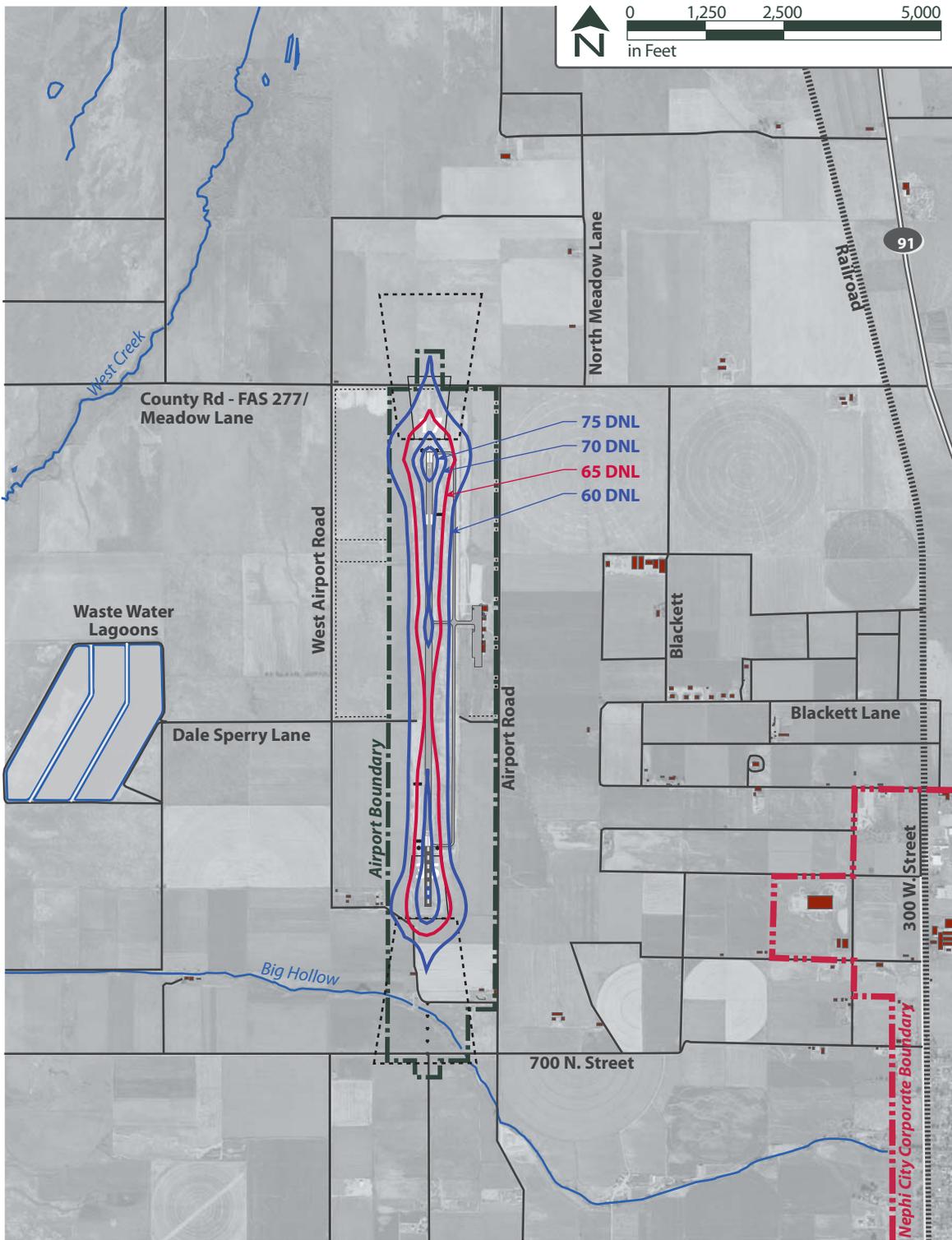


Figure D11 Future 2028 DNL Noise Contours with Generalized Existing Zoning

Hazardous Wildlife Attractants

The existence of hazardous wildlife attractants in the vicinity of airports can pose a potential serious public safety risk and economic impact to airport operators and sponsors. Retention and settling ponds, recreational use ponds, wastewater and storm water treatment facilities, ponds resulting from mining activities, and drinking water intake and treatment facilities can frequently attract large numbers of potentially hazardous wildlife, such as birds. In order to avoid potential concerns with hazardous wildlife, it is recommended that the minimum separation criteria be established between the air operations area (AOA) and certain land uses that could potentially attract hazardous wildlife, as described in FAA Advisory Circular 150/5200-33B, *Hazardous Wildlife Attractants On or Near Airports*. As identified in the *Airport Inventory* chapter, the Nephi City's existing waste water treatment plant is located less than one mile west of the Airport. In addition, the Burraston Ponds WMA is located approximately six miles north of the Airport, and the Nephi WMA is located less than two miles northwest of the Airport.

It should be noted that the 1996 Environmental Assessment (EA) for Nephi Municipal Airport concluded that since the Airport is not located directly between the waste water treatment plant and the existing wildlife areas northwest of the Airport, and the fact that no bird strikes have been reported in the vicinity of the Airport, the existing less-than-standard separation criteria was determined not to be significant. However, the Airport Improvement Program (AIP) Handbook was amended in the summer of 2009 to allow funding for Wildlife Hazard Assessments (WHAs) at general aviation airports with documented reports of wildlife hazards. Given the proximity of Nephi City's existing waste water treatment plant to the Airport, it's recommended that the City include a project for a WHA in the Capital Improvement Program of this Airport Master Plan. In the interim, Nephi City could continue to incorporate measures, developed in consultation with a wildlife damage management biologist, to minimize hazardous wildlife attractants.

Air and Water Quality

As described previously, Nephi Municipal Airport is not located within a non-attainment area. Provo, Utah, which is 42 miles north of the Airport, is the closest non-attainment area. Since the forecast general aviation operations for the Airport are well below the 180,000 annual operations threshold, and the Airport is not a commercial service airport, FAA Order 5050.4A specifies that no air quality analysis will be required for the Airport. However, short-term air quality impacts may be expected from temporary construction activities such as heavy equipment pollutant emissions, fugitive dust resulting from cut and fill activities, and the operation of portable concrete batch plants. Compliance with all applicable local, state, and federal air quality regulations and permitting requirements will be the responsibility of all contractors.

Contractors doing work at the Airport will be required to follow guidelines outlined in the Federal Aviation Administration's Advisory Circular 150/5370-10A, *Standards for Specifying Construction of Airports*, which is the FAA's guidance to airport sponsors concerning protection of the environment during construction. The final plans and specifications for any project will incorporate the provisions of AC 150/5370-10A to ensure minimal impact due to erosion, air pollution, sanitary waste, and the use of chemicals. Additionally, a National Pollutant Discharge Elimination System (NPDES) permit, administered by the Utah Department of Environmental Quality, may be required for construction projects.

Historical, Architectural, Archaeological, and Cultural Resources

At present, several sites in Nephi are listed on the National Register of Historic Places (NRHP); however, none of these existing known sites is close to airport property. The National Register lists one restricted site in Nephi, which could potentially be located within the airport vicinity. In addition, a cultural resource survey was conducted as an element of the 1996 Environmental Assessment (EA). Two archaeological sites, a prehistoric lithic and ground stone scatter and a historic trash scatter were located during the survey, but none of the sites were found to meet the eligibility requirements of the NRHP. Despite the existing absence of any historic properties (including archaeological sites, buildings, structures, objects, or districts) on the Airport, the Utah Division of State History, Historic Preservation Office will need to be contacted prior to the development of any future airport projects. Additionally, should any construction activity expose buried archaeological material, work would stop in that area, and both the FAA and the Utah Division of State History will be contacted.

Threatened and Endangered Species

Twenty (20) wildlife species of concern and two federally listed or candidate species under the *Endangered Species Act* were identified in Juab County, as presented previously. The *Endangered Species Act*, as amended, requires each federal agency to ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat of such species. Prior to the construction of any future airport projects, the Airport would need to confirm if any of the threatened and endangered species are located on Airport property, or within the proposed project area. If the species are found to be present, and depending on potential impact, an Environmental Assessment or Environmental Impact Statement may have to be prepared prior to project implementation.

Wetlands

Currently, the airport terrain generally slopes to the north and northwest, and several drainage swales are located on airport property, west of the runway, with extensive growth which serves as erosion control. Potential wetlands located within the airport vicinity include West Creek, which is located approximately one mile northwest of the Airport, and the Big Hollow channel, which intersects airport property and the extended runway centerline approximately 2,500 feet south of the existing Runway 35 threshold. In 2007, the U.S. Army Corps of Engineers verified jurisdiction of three channels within the Nephi area to be waters of the U.S., regulated under Section 404 of the *Clean Water Act*². This jurisdiction includes the entirety of the Big Hollow channel.

In addition, the 1996 Environmental Assessment (EA) indicated that a small wet meadow wetland was identified on the north end of airport property. This wet meadow wetland area contains approximately 0.1 acres of wetlands. Additionally, a canal area is located on the south end of the Airport, and is hydrologically supported by water for irrigation purposes.

If any proposed projects in the Conceptual Development Plan would impact these wetlands, the Airport will coordinate with the U.S. Army Corps of Engineers, and some further environmental analysis may be necessary. Should there be any mitigation measures identified, contractors would be required to follow guidelines outlined in the FAA's AC 150/5370-10A to minimize the impacts to the environment, including wetlands.

Farmland

Several areas of land on and surrounding airport property were identified previously as prime farmland and farmland of statewide importance, according to the National Soil Survey by the National Resources Conservation Service (NRCS).

Consultation with the U.S. Department of Agriculture (USDA) and the NRCS will be required to determine if the Farmland Protection Policy Act (FPPA) applies to the land or applies to any land to be converted to non-agricultural use as a result of the any of the proposed projects.

² Letter received from the U.S. Department of the Army, Corps of Engineers, April 13, 2007. Verification of the waters of the U.S. jurisdictional determination is valid for five years. Waters of the United States (below the ordinary high watermark) include the Salt Creek channel (from the headwaters to the Old North Diversion inlet), the Old North Diversion channel, and the entirety of the Big Hollow channel. These waters are tributaries of Utah Lake, which verifies regulation under the *Clean Water Act*, Section 404.

Floodplains

Nephi Municipal Airport is not located within a 100-year floodplain; therefore, there are no proposed impacts to any floodplains associated with the implementation of any of the recommended airport development projects. Although there are no mapped floodplains within the immediate airport vicinity, other parts of the Juab Valley are located within a 100-year floodplain. A portion of Nephi City is located within the 100-year floodplains that are associated with the Big Hollow channel³ and Salt Creek.

Section 4(f) Property

The Airport, and the immediate vicinity of the Airport, currently do not have any potential Section 4(f) resources; therefore, no impacts to any Section 4(f) resources are anticipated with the implementation of any future airport development projects.

Development Projects & Phasing

The major airside and landside projects associated with the Conceptual Development Plan are presented in the following text. As described in previous sections, the likely phasing of many of the projects will be demand dictated; therefore, projected development order of the projects will continue to evolve and change from year to year throughout the planning period of this study.

Runway 17/35 Airside Projects:

- 1) **Conduct Airport Airspace Analysis Survey for future Runway 17 and 35 instrument approach procedure development.**
- 2) **Design future GPS instrument approach procedure to each runway end.**
- 3) **Publish Runway 17 GPS instrument approach procedure.**
- 4) **Publish Runway 35 GPS instrument approach procedure.**
- 5) **Extend Runway 35 900 feet to the south.**
- 6) **Extend Taxiway "A" 900 feet to the south.**
- 7) **Conduct Airport Airspace Analysis Survey for future Runway 35 instrument approach procedure revision.**
- 8) **Install Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) to support Runway 35 instrument approach procedure.**

³ FEMA Flood Insurance Rate Map, City of Nephi, Utah, Juab County, Panel 0005C, Map Number 4902290005C, December 2007.

- 9) **Install Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) to support Runway 17 instrument approach procedure.**
- 10) **Design and publish future Required Navigation Procedure (RNP) instrument approach to each runway end.**
- 11) **Implement ongoing runway pavement maintenance projects.**

Airport Landside Projects:

- 12) **Acquire property for Runway 17 MALSR light lane (10.1 acres).**
- 13) **Acquire Runway 17 RPZ easement (22.9 acres).**
- 14) **Design/Engineer Airport Infrastructure Development Plan.**
- 15) **Prepare phasing plan for development of aircraft storage facilities.**
- 16) **Prepare phasing plan for future apron/taxiway/taxilane development.**
- 17) **Prepare phasing plan for future landside roadway and parking facility development.**
- 18) **Prepare site development standards for commercial aviation and aircraft hangar facilities.**
- 19) **Relocate BLM water and retardant storage tanks, as need is documented.**
- 20) **Relocate existing self-serve fuel storage facility, as preferred alternative is implemented.**
- 21) **Modify/rehabilitate existing hangar for Airport Maintenance Building.**
- 22) **Develop Minimum Standards for Commercial Aeronautical Activities documentation.**

Alternatives Summary

The proposed development alternatives for Nephi Municipal Airport are intended to present Nephi City with a variety of options for future facility expansion, based on input and comments provided by interested citizens and airport users within the general aviation community. Following a careful assessment of the potential impacts of the proposals for each development issue, in conjunction with a detailed FAA evaluation, the airport Sponsor has selected components of a recommended Conceptual Development Plan, which are presented in the following illustration, and which will be confirmed and presented in the *Airport Plans* chapter of this document to represent the ultimate airport configuration.

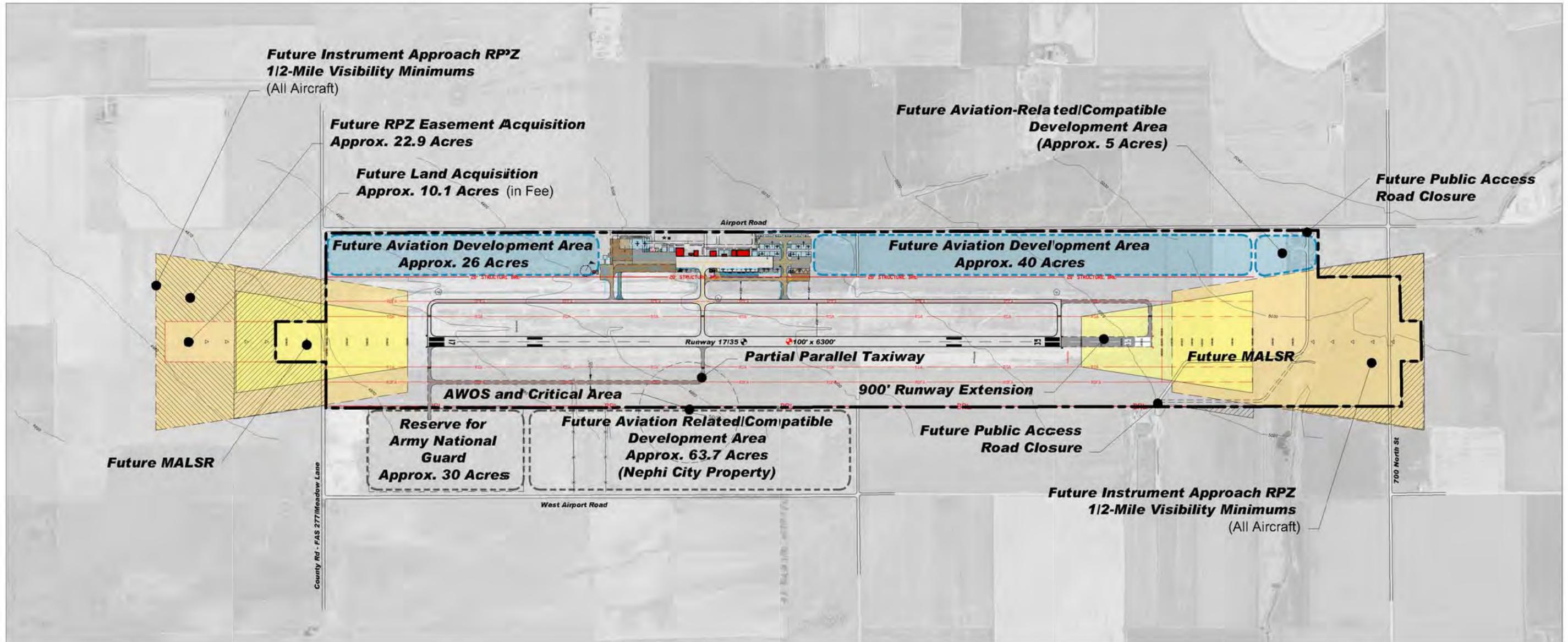
Following the confirmation of the Sponsor's Conceptual Development Plan, the appropriate state and federal agencies will be provided with copies of the plan requesting their overview of potential environmental impacts.

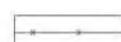
A summary of the recommendations described by the Conceptual Development Plan for Nephi Municipal Airport is presented in the following table, entitled *AIRSIDE & LANDSIDE DEVELOPMENT SUMMARY*.

Table D2
RUNWAY 17/35 AIRSIDE & LANDSIDE DEVELOPMENT SUMMARY

	Existing	Conceptual Development Plan
Runway 17/35		
Dimensions (Width)	100'	same
Dimensions (Length)		
TORA	6,300'/6,300'	7,200'/7,200'
TODA	6,300'/6,300'	7,200'/7,200'
ASDA	6,300'/6,300'	7,200'/7,200'
LDA	6,300'/6,300'	7,200'/7,200'
Airport Reference Code	C-II	Same
Instrument Approach/Visibility Minimums	None Visual	GPS/GPS ½-Mile/≥ ½-Mile
Runway Lighting	PAPI, REIL	MALSR (RW 17), MALSR (RW 35), PAPI
Parallel Taxiway	TW "A" East Side	Same/Partial TW West Side (from RW 17 to TW "B")
Landside Development Area (Infill or Expansion)		
Commercial Aviation	0.5 acres	3.9 acres
General Aviation	3.7 acres	10.8 acres
Post-Planning Aviation	75.5 acres	65 acres
Aviation-Related/Compatible	54 acres	54 acres
Fee Simple Property or Easement Acquisition Requirements		
Runway 17/35 RPZ Fee Simple/Easements	None	10.1 acres (Fee Simple)/22.9 acres (easement)

Source: BARNARD DUNKELBERG & COMPANY.



- | | |
|---|---|
|  Existing Avigation Easement |  Future Avigation Easement |
|  Existing Property Line |  Future Runway Protection Zone |
|  Existing Fencing |  Existing Runway Protection Zone |

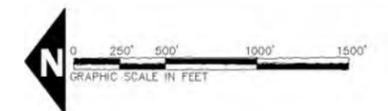


Figure D12 Conceptual Development Plan

SOURCE: Base drawing prepared by Barnard Dunkelberg & Co. using "as-built" construction drawings by Creamer & Noble Engineers, 2007.