U. S. Department of Transportation
Federal Aviation Administration
Great Lakes Region

FINAL RECORD OF DECISION
APPROVAL OF AIRPORT LAYOUT PLAN AND RELATED ACTIONS ASSOCIATED WITH DEVELOPMENT OF NEW NOISE ABATEMENT RUNWAY 3-21

Dane County Regional Airport
Madison, Wisconsin
June 1996

These decisions, as described herein, including any subsequent actions approving a grant of Federal Funds to the Dane County Regional Airport, are taken pursuant to 49 U.S.C. 40101 et. seq. and constitute orders of the Administrator that are subject to review by the courts of appeals of the United States in accordance with the provisions of 49 U.S.C. 46110.

APPROVED BY:___/s/ _____ _____6/5/96_____
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I. INTRODUCTION AND BACKGROUND

Introduction

Dane County Regional Airport (MSN) is located approximately four miles northeast of downtown Madison, Wisconsin. Owned and operated by Dane County, the airport provides commercial and general aviation services to the metropolitan Madison area. Currently, eight passenger carriers and two cargo carriers provide service to the airport. The airport is also the base for two military units: the 128th Fighter Wing of the Wisconsin Air National Guard (which has recently been replaced by the 115 Wing), and the First Battalion, 147th Aviation of the Wisconsin Army National Guard. The Air National Guard operates F16 jet fighters at the airport, while the Army National Guard operates primarily rotary wing aircraft of various types.

The airport has a four-runway configuration. The longest runway, Runway 18-36, is the primary air carrier runway. It has an overall length of 9,006 feet (ft), with the thresholds of Runway 18 and 36 being displaced 400 ft and 1,000 ft respectively, Runway 18-36 is 150 ft wide. Runway 13-31, which is 5,845 ft long and 150 ft wide, accommodates about one percent of the air carrier traffic. Runway 4-22, which is 5,051 ft long and 100 ft wide, and Runway 8-26, which is 3,380 ft long and 75 ft wide, accommodates general aviation aircraft.

Surface access to the airport is provided by U.S. Highways 151 and 51 and Interstate Highway 90/94. Two railway companies operate in the airport vicinity: The Soo Line, which transports freight on railways located southeast and immediately west of the airport, and the Chicago North Western Railway Company, which operates a freight line west of the airport.

The airport property encompasses approximately 4,000 acres. Although situated largely within the municipal boundaries of the City of Madison, the airport is surrounded by several communities including the Village of Maple Bluff, the City of Monona and the towns of Burke, Westport, Windsor, Blooming Grove and Vienna.

The majority of developed land in the airport vicinity is located south of the airport which consists primarily of single-family housing with some multi-family residences and commercial/industrial development. Lands to the east include commercial and industrial development; and residential development and open spaces are located west of the airport. Much of the land north of the airport is undeveloped open space with some commercial, industrial and residential development.

Background

Dane County, as the party primarily responsible for abating aircraft related noise at Dane County Regional Airport, has undertaken noise abatement efforts since 1980. Initial noise abatement procedures were established by Dane County in May, 1985. In January, 1990, Federal Aviation Administration (FAA) Tower Order 7220.2A, was issued defining MSN

Air Traffic Control Tower's (ATCT) operating procedures. The order included the existing local informal contra-flow procedures which direct aircraft arrivals from the north on Runway 18 and departures to the north on Runway 36 thereby directing aircraft noise away from residential development south of the airport. As is with management of air traffic at any airport, the local informal contra-flow pattern is dependent on wind, other meteorological conditions, operational complexity, and pilot requirements. Use of the procedures is subject to the discretion of the pilot-in-command and/or air traffic controller, with safety of flight operations as the primary factor. The Air National Guard Unit, the 128th Fighter Wing, established noise abatement procedures in May, 1989. In 1992 the Guard Unit replaced its A10 aircraft with F16 jet fighters and the 1989 procedures were revised to include noise abatement procedures for the F16 jet fighters. The most recent version of these procedures is dated February, 1995.

In 1991 an Airport Master Plan was completed for MSN. Dane County also contracted for the preparation of a Federal Aviation Regulations (FAR) Part 150 Noise Compatibility Study. The Dane County Board of Supervisors adopted the Airport Master Plan and Noise Compatibility Program (NCP) in June, 1991. The FAA approved Dane County's NCP in January, 1993. The MSN Airport Master Plan indicates commercial activity at MSN is expected to continue to grow over the long-term period. The number of enplanements is expected to increase from 532,149 in 1990 to over 1,000,000 in the year 2010. Commercial service operations are expected to increase from 30,816 to over 62,000 during the same period. The FAA acknowledges that current operations at MSN are below forecasted levels. However, our evaluation of MSN and the DCRA finds the forecast as documented in Table 1.1 of the FEIS to be reasonable assumptions. FAA has determined the growth expectancy at MSN to be consistent with the current master plan forecast used in the FEIS. (Refer to Section II of the FEIS, and the EPA Comment No. EPA-02 in Appendix C of this ROD for additional discussion.)

In April, 1995, the FAA issued a Finding of No Significant Impact for an Environmental Assessment for Noise Compatibility Measures at MSN. The Environmental Assessment evaluated four noise abatement measures recommended in the airport's Noise Compatibility Program. Three of the measures are modifications to flight procedures. These three measures, as well as the existing contra-flow procedures, were subsequently defined within Tower Order 8400.9A, which is devoted exclusively to noise abatement. (This order is included in Appendix A of this ROD).

Proposed Project

Dane County, the airport owner, in accordance with its FAA approved NCP, proposes the construction and operation of a new noise abatement Runway 3-21. In the NCP, the length of Runway 3-21 was listed at 6,500 feet based on preliminary planning considerations that limited the length, but it was noted that a longer runway length was desirable. Later, based on more detailed engineering involved in the ALP approval process, it was determined that a 7,200 foot runway was possible. The runway is now shown on the airport layout plan as 7,200 ft long and 150 ft wide with a full-length parallel taxiway. Also, during the EIS preparation process, ATCT personnel at MSN

determined that they would prefer to use runway end 3 mostly for departures rather than using runway end 21 mainly for arrivals as contemplated in the FEIS.

Currently, the airport's contra-flow procedure directs the air traffic flow to and from the north over largely undeveloped land. Aircraft operate in a head-to-head configuration with the majority of departures from Runway 36 and arrivals on Runway 18. Construction and operation of Runway 3-21 would allow the airport to continue to direct the majority of air traffic operations to and from the north, with departures from Runways 36 and 3 and arrivals to Runways 18 and 21. However, the existing head-to-head contra-flow procedure would be modified because the majority of aircraft operating to and from the north would occur on two northerly-oriented runways (18-36 and 3-21) rather than on the same runway or parallel runways. The modified contra-flow procedure will direct aircraft arrivals from the north on Runway 18 and departures to the north on Runway 3, thereby directing the noise away from residential development south of the airport. The existing contra-flow procedures also direct the noise away from the residential development south of the airport, by directing aircraft arrivals from the north on Runway 18 and departures to the north on Runway 36.

The proposed project will also require property acquisition for Approach Area necessitating relocation of three single-family residences and purchase of a commercial property, drainage work, utility relocations, road modifications, installation of an instrument landing system (ILS) and medium-intensity approach lighting system with runway alignment indicator lights (MALSR) for Runway 21, publication of new standard instrument approach and departure procedures for Runway 3-21 and issuance of a new Air Traffic Control Order to implement new approach and departure procedures. All these associated actions are conventionally related to the planning and development of any new airport runway. The analysis documented in the FEIS indicates that this project is expected to relieve 445 residential units and an estimated population of 970 within the DNL 65-75dB contours. Twenty one units will be newly impacted, nineteen of these units are within the DNL 65-70 dB and two units are within the DNL 70-75 dB.

During the FEIS comment period, comments were received questioning the adequacy of the AEM analysis included in Appendix I sensitivity analysis. In order to validate the AEM methodology, additional INM modeling was conducted to define the 1997 impacts utilizing the revised fleet mix for the Runway 3-21 and No Action alternatives. A summary of this additional analysis is included in Appendix B. This revised analysis indicates that the proposed project will relieve 624 units (vs 445 in FEIS) and 1,380 persons (vs 970 in FEIS).

Project elements are described in more detail in the Final Environmental Impact Statement (FEIS), Section 1 and this ROD, Section III Agency Actions.

II. PURPOSE OF AND NEED FOR ACTION

The proposed action is to provide for noise mitigation through the construction of a new noise abatement Runway 3-21. Several commentators on both the Draft and Final EISs have asked for further clarification of the purpose and need for the proposed action. The purpose stated in the EIS is that the airport owner, Dane County, desires to reduce the impacts of aircraft overflights and associated noise over densely populated areas south and southwest of the airport in response to complaints regarding aircraft noise and the nuisance of aircraft overflights. Years ago after consultation with the public and airport tenants/users, the airport owner requested the FAA direct overflights, along with their associated noise, over less populated areas north of Dane County Regional Airport (MSN). The means to accomplish this direction of aircraft has been through FAA's implementation of a tower order specifying how the airport's runways are to be used.

In recent years, FAA air traffic control personnel and aircraft pilots using MSN have seen increasing operational complexity affecting their ability to continue the current noise abatement procedure. Without the noise abatement procedure, aircraft noise and overflights would occur with greater frequency over the higher density areas south of the airport which the airport owner, Dane County, finds unacceptable. Likewise, the airport owner, in consultation with the public and airport tenants/users through a FAR Part 150 study have determined that it is locally unacceptable to substitute alternate noise mitigation measures, including sound insulation and/or relocation of residents, for the current procedure of directing aircraft away from the more densely populated areas to the south of the airport. Thus the purpose of the action, making proposed improvements to the airfield configuration, is to reduce the operational complexity for both the air traffic controllers and pilots, with its inherent impact on the safety and efficiency of operations at the airport, while at the same time maintaining, and if possible, increasing relief beyond the level of current noise abatement procedure utilizing contra-flow.

The need for the proposed action is based on the several factors that have increased the operational complexity for the air traffic controllers and pilots using MSN. First, the informal contra flow noise abatement procedure utilized at MSN had its origins in the early 1980's when there was less commercial aircraft traffic at the airport and the military use of the airport was by A-10 aircraft which were significantly slower in speed than the high performance F-16 aircraft currently utilized by the military. The F-16 aircraft are also often flown in formations of two to four aircraft in an overhead pattern for approaches which necessitate that aircraft departing Runway 36 be held until the military aircraft have completed their arrival on Runway 18. The larger number of commercial aircraft and the higher speeds and formation flying of military aircraft make it difficult to run head to head operations (aircraft using the same runway end for both approaches and departures) which is the basic assumption of the informal contra-flow noise abatement procedure. It takes time and coordination, both resource intensive commodities, to accomplish this procedure safely and efficiently. Even with present day traffic levels, tower controllers are experiencing difficulty applying contra-flow procedures. Safe implementation of contra-flow operations depends on much more than the yearly number

of aircraft operations. It is also dependent on weather, particularly wind speed, wind direction, and visibility; pilot operational requirements; traffic volume at a given time; and operation complexity.

Utilization of contra-flow at MSN is unique with respect to the other 64 air traffic control towers in the Great Lakes Region. The contra-flow procedure is in support of the airport owner's commitment to the community to keep flights and aircraft noise at a minimum from areas south and southwest of the airport. The tower controllers at MSN solicit pilots to participate in contra-flow (head to head) operations during daytime hours, when the military and commercial air carriers conduct most of their operations. At other airport locations, tower personnel undertake contra-flow procedures in conjunction with night time air cargo operations which arrive mainly during the period 10:00 p.m. and 2:00 a.m. and leave between the hours of 4:00 a.m. to 6:00 a.m. During such time periods, there are minimal conflicts between arrival and departure streams of air traffic.

A full facility evaluation was conducted by FAA Headquarters, Evaluations Division, Air Traffic System Effectiveness, ATH-100, in 1993. During the evaluation it was observed that the demands of the National Guard regarding application of the noise abatement procedures appeared to require excessive coordination by tower and radar approach controllers. The excessive coordination required to accommodate opposite direction noise abatement appeared to significantly and unnecessarily increase the complexity of air traffic operations. In February, 1994, an evaluation by the Wisconsin HUB facility staff observed similar problems were continuing.

Increasing traffic at MSN, without airfield improvements, would likely make the present day contra-flow operation difficult, if not impossible, to continue. Moreover, the Madison Air Traffic Control Tower and Great Lakes Region Air Traffic Division, Operations Branch have indicated that FAA may be forced to reduce or discontinue the contra-flow operation absent the airfield changes proposed in the EIS. Staffing availability may also limit the ability of tower personnel to solicit contra-flow operations.

Dane County has proposed construction of a noise abatement runway (Runway 3-21) to enable tower personnel to operate a modified contra-flow method of noise abatement which would allow for continued noise reduction benefits for high density residential areas south of the airport. This proposed noise abatement runway is a modification of and an improvement over one of the noise abatement measures evaluated as part of Dane County's FAR Part 150 Study and recommended in the airport's adopted Noise Compatibility Program (NCP). The following is a more detailed description of the needs and benefits of the proposed action divided into its Noise Reduction and Operational Considerations.

Comments received during the Draft and Final EIS requested additional clarification of the aircraft operations forecast for Madison. Although most FAA approved aviation forecasts are projected in some form of a relatively straight line progression, in reality airport operational growth normally occurs through a series of peaks and valleys. This sporadic growth pattern is often a direct result of local and/or national economic

conditions, airline/air taxi short term decisions, airline economics and preferences, and the viability and economic health of the air carriers serving that particular community.

The forecast for Madison, as contained in the EIS, was prepared as a result of an intensive master planning effort by the airport owner that considered not only the historical trend of aviation activity but also Madison's economic growth potential, demographic patterns, disposable personal income, geographical attributes, local aviation actions and other external factors.

The current operations at Madison fall below the levels forecast in the FEIS and therefore the noise impacts may be somewhat overstated in the FEIS. The forecast was impacted between 1989-1995 by the Gulf War, ongoing terrorist/bombing alerts nationally and internationally, grounding all ATR aircraft due to icing conditions, introduction of low cost carriers at surrounding airports; and decisions by airlines to streamline their operations. The airport is on a recovery with airlines considering and expanding operations to the Las Vegas and Denver markets. (Refer to EPA Comment No. EPA-02 in Appendix C of this ROD for additional discussion.

Based on comments received on the Draft and Final EIS, the FAA re-examined the forecasts, taking into consideration the short term impacts and Madison's social and economic strength, we find the forecasts reasonable and acceptable.

Noise Reduction

The proposed noise abatement runway (Runway 3-21) is one of the noise abatement measures which was modified and improved during the EIS process from the airport's adopted NCP.

To reduce impacts from aircraft noise, aircraft traffic at MSN currently operates in a local contra-flow configuration. The contra-flow pattern directs aircraft to the area north of the airport for take-offs and landings. Depending on safety and efficiency factors (including wind, other meteorological conditions, operational complexity and pilot requirements), aircraft arrive from the north on Runway 18 and depart to the north on Runway 36. (Runway 18-36 is the primary air carrier runway.)

The benefit of the contra-flow pattern of air traffic control is that the bulk of the noise generated by air carrier jet aircraft operating in and out of Madison is directed over largely undeveloped open space north of the airport and away from the high density residential areas south of the airport.

The NCP recommends the construction of a new noise abatement runway 3-21. It also recommends continuation of the present contra-flow operation as a noise abatement measure. Construction of Runway 3-21 would allow control tower personnel to operate a modified contra-flow method of noise abatement which would provide for continued noise reduction benefits for high-density residential areas located south and southwest of the airport. Air Traffic Control Tower Order 8400.9A will be modified and adopted by

the MSN ATCT, consistent with the Environmental Impact Statement for Runway 3-21, and subsequently implemented dependent on safety and efficiency factors listed earlier. This procedure and any subsequent changes will be subject to appropriate coordination with the airport owner prior to implementation.

Implementation of any modified informal contra-flow using two runways, Runway 3-21 and Runway 18-36, would provide for greater airfield operational efficiency than using one runway (Runway 18-36) for a contra-flow pattern, particularly as aircraft operations are forecasted to increase. Increasing air traffic at MSN, without airfield improvements provided by the new runway, would make a contra-flow operation difficult, if not impossible, to continue. The use of two runways for a modified contra-flow pattern allows aircraft to continue departures to the north and northeast, from Runway 3, and landings from the north, on Runway 18, thereby directing aircraft noise away from areas south and southwest of the airport.

Operational Considerations

The proposed modified contra-flow traffic pattern would include participation by all aircraft currently operating at the airport except the F16s, flown by the Wisconsin Air National Guard, and the Boeing 727-200 air carrier aircraft with JT8D-9 engines. F16s are limited to operations on Runway 18-36 because of the Guard's safety requirement that a hydraulic braking system (arresting gear) be installed at the runway in the event of an aircraft system malfunction on takeoff or landing. An arresting gear is installed at both ends of Runway 18-36.

As a general operating characteristic, the Boeing 727-200 with JT8D-9 engines requires a runway longer than the proposed 7,200 ft for trips greater than 1,000 miles because of the relatively low power of the JT8D-9 engine. For this reason the B727-200 aircraft, with JT8D-9 engines, would continue to depart from Runway 18-36 and would not participate in a modified contra-flow pattern. However, the Boeing 727-200 with higher-powered JT8D-15 engines can operate from Runway 3-21 and would participate in a modified contra-flow air traffic pattern. It should also be noted that the performance characteristics of all aircraft are affected by weather conditions and there will be seasonal variations of runway use at the airport.

The operational safety considerations for a modified contra-flow pattern using Runway 3 for departures and Runway 18 for landings were noted in comments received during the Airspace Feasibility process, and have been addressed by Madison ATCT. Madison ATCT, in coordination with the airport owner, has formulated procedures that put departures from Runway 3 on a 45 degree or greater divergent track from arrivals to Runway 18 while at the same time avoiding sensitive land uses east of the airport.

III. AGENCY ACTIONS

The federal actions required to implement the airport owner's preferred alternative include the unconditional approval of the airport owner's Airport Layout Plan (including airspace evaluation of the proposed development, location of the placement of navigational aids, utility or drainage development, modifications to roadway systems or any other local planning considerations necessitated by state/local requirements); environmental approval for federal funding support under the Airport and Airway Improvement Act of 1982 now referred to as Title 49 U.S. Code, as amended for airport development; and implementation of Air Traffic Control procedures.

These federal actions also include FAA actions normally associated with the safe operation of a new runway and implementation of Dane County's NCP recommendations (which were earlier approved by FAA) include: a) installation and operation of an instrument landing system (ILS) and medium intensity approach lighting system with runway alignment indicator lights (MALSR) for Runway 21; b) publication of new standard instrument approach and departure procedures for Runway 3-21; and c) issuance of a new Air Traffic Control Tower Order to implement new approach and departure procedures. All of these actions and, any subsequent changes to these actions, will require coordination locally between FAA personnel and the airport owner prior to their establishment and operation. Their development and implementation will be consistent with the environmental studies/findings contained in the FEIS and this ROD.

The issuance of a new tower order to replace Tower Order 8400.9A (which is devoted exclusively to noise abatement), is key to use of the new runway 3-21 for informal contra-flow operations and implementation of other voluntary noise abatement measures. ATCT personnel and the airport owner plan to coordinate their efforts to ensure airport tenant/user participation to obtain maximum noise reduction benefits.

In addition to items already in the existing Tower Order 8400.9A, the following supplementary measures proposed in the FEIS will be incorporated, including modification of existing items in the tower order that are no longer appropriate:

- Adopt an informal preferential runway use system which encourages departures on runways 3, 31 and 36 while preferring arrivals on runways 21, 13 and 18.
- Adopt procedures requiring east and southbound turbojet aircraft exceeding 12,500 pounds and departing Runway 3 toturn east before reaching 2,500 ft MSL.
- Adopt procedures requiring all turbojet aircraft exceeding 12,500 pounds and departing Runway 21 to turn left 10 degrees as soon as safe and practicable.

Because each of these procedures is dependent upon weather and operational conditions, their use is subject to the discretion of the pilot-in-command and/or air traffic controller with safety of flight operations as the primary factor.

IV. ALTERNATIVES

The Dane County Regional Airport Master Plan and accompanying FAR Part 150 Noise Compatibility Study identified several airfield development alternatives directed at the mitigation of aircraft noise-related impacts and meeting projected aviation demand. The following alternatives were selected for analysis of environmental impact on the basis of the achievement of both objectives:

- No Action (includes the ATCT's discontinuance of current contra-flow procedure)
- Construct a new Runway 3-21 with a length of 7,200 ft (Alternative 3-21)
- Reconstruct and extend Runway 4-22 to a length of 7,200 ft (2,150 ft of extension) toward the northeast (Alternative 4-22 Extension)
- Extend Runway 18-36 3,300 ft northward (Alternative 18-36 Extension)

IV.1. ALTERNATIVE EXAMINED BUT ELIMINATED FROM DETAILED ANALYSIS

Operational Alternative 3-21 - An option within the alternative for the construction of a new Runway 3-21 that was considered on the basis of possible noise benefits is the use of both Runways 18-36 and 3-21 by F16s. According to Air Guard safety requirements, high performance aircraft such as F16s would not be authorized to use a runway without arresting gear in place. This equipment consists of underground hydraulic braking systems connected to cables stretched across the runway. The purpose is to safely bring an aircraft to a stop in case the pilot is unable to stop because of aircraft system malfunction. The Air Guard would be responsible for obtaining and installing the arresting gear. The total cost is estimated to be $1,000,000.

An analysis of the noise impacts on homes in the airport vicinity was made for Operational Alternative 3-21. Noise exposure contours were generated using FAA's Integrated Noise Model in version 4.11. The number of homes that lie in areas subjected to noise above a certain level was identified and compared with the number of impacted homes in the No Action Alternative. A total of 18 fewer homes would be relieved from noise impacts with the operational alternative (F16s on both Runway 18-36 and 3-21) compared with the alternative of F16s on Runway 18-36 only. Considering the cost and operational difficulty of maintaining the arresting gear and the slight benefit of impacting 18 fewer homes, the operational alternative has been eliminated from further analysis.

IV.2 ALTERNATIVES EXAMINED IN DETAIL

Alternative 3-21 (Airport owner's preferred alternative) - The construction of a new Runway 3-21 would provide a reduction in aircraft traffic over the heavily populated areas south and southwest of the airport, as well as improving airport operational characteristics through a reduction in taxi distances to and from the terminal area. This alternative provides sufficient runway length so that it can be used by a significant percentage of air carrier traffic. Under this alternative, all Wisconsin Air Guard F16s

would operate on Runway 18-36. Runway 4-22 would be removed under this alternative. An associated benefit provided by this alternative is operational flexibility during snow removal and airport maintenance operations.

This alternative would, in association with supplemental operational procedures developed by the Madison ATCT, ensure a 45 degree or greater separation between departures on Runway 3 and arrivals on Runway 18, to provide enhanced airside capacity. The shorter taxi distance associated with this alternative, when compared to the Alternative 18-36 Extension or the No Action Alternative, would provide for increased airside capacity.

The assessment of the impacts of this alternative also incorporated the effect of the three flight procedures recommended by the airport's Noise Compatibility Program. These three measures are modifications to flight procedures as defined within Tower Order 8400.9A. These three procedures are described as follows

- Adopt an informal preferential use system which encourage departure on runway 3, 31, and 36 while preferring arrivals on runways 21, 13 and 18.
- Adopt procedures requiring east and southbound turbojet aircraft exceeding 12,500 pounds and departing Runway 3 to turn east before reaching 2,500 feet MSL.
- Adopt procedures requiring all turbojet aircraft exceeding 12,500 pounds and departing Runway 21 to turn left ten degrees as soon as safe and practicable.

The primary engineering and airport operations considerations relative to this alternative involve Messerschmidt Road. In order to construct Runway 3-21, Messerschmidt Road must be terminated east and west of the runway/taxiway system and the required aviation-related clearance areas. It is proposed that this be accomplished with a cul-de-sac on the west side of the runway/taxiway system. Messerschmidt Road would be accessible only from County Road CV west of the new runway, and would terminate at the cul-de-sac. East-west traffic movement would be acommodated by Hoepker Road, located approximately one mile north of Messerschmidt Road. Hoepker Road would provide an east-west connection between County Road CV, US 51 and US 151. It is not anticipated the average commute time would be altered significantly. According to WisDOT 1993 records, Hoepker Road has an average daily traffic volume of 1,300 vehicles, which is approximately 26% of design capacity, on the section of road between US 51 and County Road.

Alternative 3-21 would result in the direct loss of approximately 42 acres and corresponding wildlife habitat. Wetlands lost from this alternative are considerably less than those impacted by the other build alternatives. This alternative would also require the culverting of Starkweather Creek. Approximately 1,150 ft of new culvert would be required to culvert the creek.

Alternative 4-22 Extension - This alternative would reconstruct and extend Runway 4-22 from 5,050 to 7,200 ft in length, thus allowing air carrier operations. The result of the

implementation of this alternative, as identified in the Part 150 Study, would be to divert traffic away from the more heavily populated areas south and southwest of the airport.

The EIS's assessment of the various environmental impacts resulting from this alternative included consideration of two noise abatement measures considered in a 1995 Environmental Assessment for the Dane County Regional Airport. These measures consisted of the following:

- Procedure requiring east and southbound turbojet aircraft exceeding 12,500 pounds and departing Runway 4 to climb on runway heading through 2,500 feet MSL (above mean sea level) before turning right.
- Procedure requiring turbojet aircraft exceeding 12,500 pounds and departing Runway 22 to turn left 20 degrees as soon as safe and practicable.

This option would also have airfield capacity benefits in that it would provide shorter taxi distances from the terminal area for departures on Runway 4 and landings on Runway 22 when compared to either the extension of Runway 18-36 or the No Action Alternative. The 4-22 extension would also allow a modified contra-flow operation to continue. When combined with procedures developed by the Madison ATCT which would put departures from Runway 4 on a 45 degree or greater divergent track from arrivals to Runway 18, this modified contra-flow operation provides airside capacity benefits. An associated benefit under this alternative is that it provides operational flexibility during snow removal and airport maintenance operations.

The proposed 7,200-ft length would, in accordance with the previously cited FAA design standards, accommodate 75% of large aircraft (60,000 pounds or less) at 90% full load. The 727-200 design aircraft could be accommodated at approximately 90% of maximum takeoff weight.

The primary engineering restriction to the implementation of this alternative is the requirement for avoiding interferences with US 51, which is located some 1,400 ft off the extended centerline of the existing Runway 4. Two possible approaches to avoiding interferences between the extended runway and US 51 are 1) the relocation of the highway and 2) construction of a tunnel which would permit the extended runway to be built over US 51. The tunneling option was reviewed in a brief conceptual engineering study. The relocation of US 51 is not deemed to be prudent primarily because it was relocated in 1989.

A tunnel designed to convey US 51 under the extended Runway 4-22 would be approximately 1,330 ft in length, with a cross-section designed to carry a six-lane roadway and having a minimum vertical clearance of 16 ft for vehicular traffic. Construction in the area of the runway extension presents a number of engineering challenges since the area is traversed by Starkweather Creek and is generally poorly drained. The creek must either be culverted as it crosses the tunnel, presenting a very complex and difficult engineering design, or rerouted.

Further, this alternative and all of its associated options have the potential for construction in areas which are jurisdictional wetlands, thus resulting in a requirement for a Section 404 permit. Finally, above-ground construction in the area adjacent to US 51 would have to be raised above the elevation of the 100-year floodplain.

Alternative 18-36 Extension - This development alternative was identified in the Part 150 Study as being a 3,300 ft extension of Runway 18-36. So as not to create confusion, this identification of the alternative will be retained for this discussion, however, it should be noted that in 1992, a section of pavement 400 ft in length, located immediately northward of the current displaced threshold, was reconstructed to full strength so that only 2,900 ft of additional full strength pavement is now required to constitute the stipulated 3,300 ft extension.

Runway 18-36 currently has an overall length of 9,006 ft, with the thresholds of Runway 18 and 36 being displaced 400 ft and 1,000 ft, respectively, thus providing a useable length of 7,606 ft. As previously indicated under this development option, the runway would be extended 2,900 ft northward of its existing actual threshold while the threshold of Runway 36 would be displaced an additional 2,200 ft northward to the intersection with Runway 4-22. The resultant effective length of Runway 18-36 would be 8,706 ft. This alternative would provide for a reduction in noise impacts to the heavily populated areas to the south of the airport, while the number of these overflights continue to increase over the same area.

On the basis of design guidelines provided in FAA Advisory Circular (AC) 150/5325-4A, the 8,700 runway length provides adequate takeoff and landing length for the 727-200, the design aircraft for MSN, for stage (trip) lengths in excess of 1,000 miles. Additionally, using Airport Design, Version 4.1, the FAA's airport design computer program, the 8,700-ft length will accommodate 100% of large aircraft (60,000 pounds or less) at 90% of useful load and stage lengths in excess of 1,000 miles.

The selection of Alternative 18-36 Extension would, however, have certain significant environmental, engineering, and airfield operations implications. These are discussed below:

- This option would require the relocation of County Road CV which currently is located approximately 1,400 ft north of the northern end of Runway 36. The connection of County Road CV to Messerschmidt Road would also be terminated, with Messerschmidt Road ending in a cul-de-sac on the east side of the extended runway.
- The Soo Line (formerly the Chicago-Milwaukee-St. Paul and Pacific Railroad) is located westward of Runway 18-36 and the airport's western boundary. The railroad's alignment is on an intersecting course with Runway 18-36 and crosses the extended runway centerline approximately 3,300 ft north of the existing end of Runway 18. FAR Part 77 requires that a 23-ft vertical clearance be maintained between specified imaginary surfaces; in this case between the Runway Protection Zone (RPZ), the 50 to 1 Approach Surface, and the 7 to 1 Transitional Surface

(which is perpendicular to the runway centerline), and the railway bed. These surfaces are described in Section 2.1. In order to maintain the Part 77 clearance, the railroad must be relocated westward in order to avoid the RPZ and Transitional Surface of the extended Runway 18-36.

- A significant increase in ground elevation exists northeastward of the extended centerline of Runway 18-36. This formation rises fairly steeply to a height of more than 90 ft above the current runway end elevation and would intrude on the runway safety area and inner transitional Obstacle Free Zone of the extended Runway 18-36. Because of the location of the Soo Line Railway west of the runway, it is likely that the glide slope antenna, and therefore, the glide slope critical area, would be located east of the runway. Grading for this facility would also be required. Additionally, required line of sight standards could not be met. Accordingly, extensive grading would be required in this area in order to extend Runway 18-36.
- A marshy area is located northwestward of the existing extended centerline of Runway 18-36. The extension of Runway 18-36 is, therefore, likely to involve construction in jurisdictional wetlands and would require that a Section 404 permit be obtained from the U.S. Army Corps of Engineers.

It should be noted that only the extended portion of the runway would require additional grading and clearances for runway and taxiway safety areas as well as perimeter road extension.

IV.3. NO-ACTION ALTERNATIVE

Commentors on the FEIS have sought clarification of the No Action Alternative in its relationship to the purpose and need for the project. This alternative assumes the present airport layout with all runways operational; 18-36, 4-22, 8-26 and 13-31 and no use of contra-flow procedures. The No Action Alternative incorporated the modifications to flight procedures which were evaluated in the Environmental Assessment for Noise Compatibility Measures at DCRA, and are included in the operational conditions for the base year (1992) shown as Exhibit 3.6 of the FEIS. These flight modifications are described in Section 4.1.1.5 of the FEIS.

The No Action Alternative has aircraft operations distributed among the runways in the same manner as the base year, but has the number of operations forecasted to increase. As described in Section 1.3, Purpose and Need of the FEIS and further clarified in the Section II of this ROD, without improving the current airfield layout, an increase in aircraft operations would preclude continuation, or modification, of the existing contra-flow. Therefore, the No Action Alternative does not incorporate the continuation or modification, of the existing contra-flow operation, but instead incorporates aircraft operations based on wind considerations. Wind directed operations would place more aircraft over the City of Madison rather than over the area north of the airport. The runway use percentages are presented in the FEIS in Table 4.2 and Exhibit 4.3 in the FEIS depicts the contours generated for this alternative.

While the No Action Alternative would not address the stated purpose and need, it is generally considered to be viable since it is the default alternative which would occur if a build alternative is not approved for implementation. This particular No Action Alternative is used because absent airfield development as proposed in the EIS, Air Traffic Control recognizes the need to eventually discontinue use of the existing contra-flow procedure and incorporate aircraft operations based on wind and weather conditions. See response to EPA comment 13-1 in Appendix C of the ROD. Use of the current procedure as the No Action Alternative would underestimate the benefits of the action. Additionally, the examination of the No Action Alternative is required for National Environmental Policy Act documentation.

From the perspective of engineering considerations, the No Action Alternative has the lowest short-term costs; however, this premise requires careful review in the longer term. While the No Action Alternative provides the fewest short-term disruptions, its longer-term consequence is that the airport's noise reduction goals and operational demands are not satisfied.

Although the No Action Alternative does not involve physical changes to the existing airfield, it assumes that there will be operational changes to existing conditions, including possible modification of the current ATCT tower order. This change would allow the discontinuance of the existing local contra-flow operations and move to an operational mode where wind and weather are more predominant in selecting which runway to use. Construction of Alternative 3-21, which is the airport owner’s preferred alternative, would continue to shift aircraft noise to the less densely populated areas to the north and northeast of the airport by allowing the use of a modified contra-flow procedure. The Part 150 Study states that while the airport has been able to successfully operate using the contra-flow procedure, it is expected this will become increasingly difficult with the existing airfield configuration as traffic at MSN increases. The Part 150 study also states that over the next twenty years, the preferential use program will gradually convert to a preferential north flow program if an additional air carrier runway is not constructed. Using a north flow program, aircraft would arrive on Runway 36 and depart from Runway 36, conditions permitting.

Based on the Part 150 analysis and information provided through the recent FAA Air Traffic Control Tower’s internal re-evaluation of its procedures, Air Traffic has stated that they wish to discontinue use of the existing contra-flow procedure without an additional air carrier runway**.** Therefore the No Action Alternative would not meet the stated purpose and need of the proposed project.

IV.4. SPONSOR PREFERRED ALTERNATIVE

Alternative 3-21 is the Sponsor's preferred alternative. Dane County, as airport owner, proposes to construct Runway 3-21 as the preferred alternative. The County’s preferred alternative is selected based on the result of community support for the proposed project and the NCP recommendation of construction of Runway 3-21 as an aircraft noise abatement measure. Several concerns associated with this alternative are the requirements

to terminate Messerschmidt Road in a cul-de-sac west of the new runway and to culvert Starkweather Creek.

IV.5 SELECTED ALTERNATIVE

The FAA believes that Dane County's preferred alternative of constructing the Runway 3-21 Alternative is needed because it accomplishes the purpose of the project of reducing operational complexity by continuing, with supplemental local modification, the existing informal contra-flow pattern of air traffic. This pattern directs aircraft over less populated areas north of the airport a nd away from the higher density residential areas south of the airport to reduce the impacts of aircraft noise over areas south and southwest of the airport.

Implementation of the preferred alternative, construction of Runway 3-21 as a noise abatement measure, would allow the airport to continue to operate with a modified contra-flow method of noise abatement. This local contra-flow procedure**,** as is the case with any air traffic procedure, would be implemented informally based on safety and efficiency factors (including wind, other meteorological conditions, operational complexity and pilot requirements). The use of two runways, Runway 18-36 and Runway 3-21, for a modified contra-flow pattern allows aircraft to continue departures to the northeast from Runway 3 and landings from the north on Runway 18, thereby directing aircraft noise away from areas south and southwest of the airport.

The airport owner's preferred alternative would result in beneficial environmental impacts, particularly with respect to aircraft noise and compatible land use. There would be an overall decrease in 1997 residential units within the DNL 65-70 dB of nearly 258 with the proposed project compared to the No Action Alternative and within the DNL 70-75 dB the overall decrease in residential units would be nearly 187. Therefore, approximately 445 residential units and an estimated population of 970 persons would be relieved from noise impacts from aircraft with the proposed project as compared with the No Action Alternative. On the other hand, twenty one units will be newly impacted, nineteen of these units are within the DNL 65-70 dB and two units are within the DNL 70-75 dB. An estimated forty-six persons will be newly impacted, forty two in the DNL 65-70 dB and four within the DNL 70-75 dB.

In response to several comments received on the FEIS, additional INM model runs were conducted to analyze the impact of a revised 1997 fleet on the number of impacted residential units. This analysis, which is documented in Appendix B, indicates that instead of 445 units being relieved from impacts as indicated in the FEIS, actually 624 residential units would be relieved. This represents an additional 179 units removed from noise impacts over and above the 445 units indicated in the FEIS. This is less than what was originally indicated in the FEIS as being negatively impacted.

The FAA has completed appropriate aviation technical review and has concluded that the proposed project can be implemented at MSN consistent with consideration of safety, efficiency and utility. The FAA has considered the fact that the preferred alternative

proposed in the FEIS has undergone extensive public scrutiny throughout the public involvement process. In addition, the FAA has considered that Dane County officials and MSN have been conducting ongoing negotiations with airport neighbors and neighboring communities to resolve issues related to the impacts and mitigation proposed in the FEIS.

After careful consideration of the analysis of the impacts of the various alternatives, and of the ability of these alternatives to satisfy the identified purpose and need for the proposal; and after review and consideration of the testimony at the public hearings, of comments submitted in response to the circulation of the DEIS, and of the coordination with federal, state and local agencies, and after distribution of the FEIS and review and consideration of comments submitted in response to it, the FAA believes that Dane County's preferred alternative in the FEIS is acceptable.

V. AFFECTED ENVIRONMENT

Population

Since 1960, Madison, Dane County and Wisconsin populations have all grown and are expected to continue increasing in the future . Dane County's overall growth has slowed since the 1970s, with Madison experiencing negative growth during that period. During the 1980s, however, Madison's rate of population growth exceeded that of both Dane County and Wisconsin. As of 1990, Madison's population was 191,262. Dane County's 1993 population was estimated at 376,989. This represents an increase of 9,904 from 1990, which factors to a ten-year growth rate of 13.5%. The county experienced a similar growth rate in the 1980s. To compare, Wisconsin's growth rate during the 1980s was 4%, and totaled 4,891,769 in 1990.

Land Use Information

Airport Facilities - MSN is located on the northeast side of Madison, approximately four miles from the downtown business district. About three-quarters of the airport property is located within the Madison city limits and one-quarter in the Town of Burke.

The main terminal, airport operations, parking, and other support facilities are located on the west side of the airport property adjacent to the primary runway, Runway 18-36. The general aviation area is located across the property on the east side of the field and at the southeast corner, along with general aviation area operations. Adjacent to the air cargo facilities on the south side of MSN is a large area leased to the Wisconsin National Guard, which includes two units: the 128th Fighter Wing of the Wisconsin Air National Guard and a helicopter unit of the Wisconsin Army National Guard. Except for roadway crossings, all land under the existing Runway Protection Zones of the three main runways is either undeveloped or restricted to use as cropland. Lease funds are used for airport revenue support.

Land Use - Land use in the airport vicinity ranges from relatively dense urban development south and west of the airport, to suburban and rural uses north and east of the facility. The majority of developed land in the vicinity of MSN is south of Hanson Road, which also marks approximately the northernmost airport property boundary. Most of the area north and northeast of the airport is currently undeveloped. Substantial acreage north and west of the airport is dedicated as park and open space reserves. These areas include the Cherokee Marsh State Fishery Area, Token Creek County Park, and Yahara Heights Natural Resource Area, and cover a combined 2,052 acres. Other undeveloped tracts in this area are used for agriculture (cropland) or are wooded.

Commercial and industrial land uses, generally considered to be compatible with aviation operations, are primarily concentrated in the area south and east of the airport. Some commercial/industrial uses are also scattered north and west of the airport.

Most of the residential land use is located south and southwest of the airport. This category consists mainly of single-family dwellings and a few scattered multi-family developments. This area also includes seven public and private schools, the Madison Area Technical College, several neighborhood parks, and Reindahl Park. The latter facility is a 92-acre community park operated by the City of Madison Parks Division and includes sports fields, basketball courts, an ice-skating and hockey rink, a group shelter and picnic facilities.

Topography and Soils

MSN lies on relatively flat ground with elevations ranging from approximately 860 ft above MSL at the south end to approximately 900 ft above MSL (mean sea level) at the north end. A relief of approximately 110 ft lies just north of the airport that is due to the remnants of a glacial moraine. Cherokee Marsh is located northwest of the airport and has an approximate elevation of 850 ft above MSL.

The groundwater flow is toward the west and south of the airport. Surface runoff is expected to flow toward the same direction.

MSN is situated on and surrounded by soils that are considered by the Soil Conservation Service to be prime or unique for farming. Prime farmlands are those which can be continuously or nearly continuously farmed without degradation to the environment. Unique farmlands are used for the production of specific high-value food and fiber crops. Some of the areas identified as having prime or unique soil types are currently developed. Even though these developed areas contain prime or unique soil types, they are no longer suitable for agricultural purposes and may be considered for conversion.

Biotic Communities

MSN is located in the Lake Monona watershed, which is within the headwater region of the Rock River basin. This basin is now separated into a chain of four lakes connected by

the Yahara River and eventually draining south into the Rock River. The airport is located on a filled portion of Cherokee Marsh—the major wetland in the Lake Mendota watershed and Dane County's largest wetland.

The Cherokee Marsh State Natural Area (SNA), the Cherokee Marsh Addition Natural Area, the Yahara Wet Prairie Natural Area, and the Cherokee Marsh Public Use Natural Area are part of a 2,000-acre wetland complex located generally east of the Yahara River. The extensive Cherokee Marsh to the north of the airport contains a diversity of plant communities.

Existing wetland and biotic communities within the airport facility and in the immediate area are classified into five major categories: agricultural lands, disturbed prairie, managed grasslands, upland woodlands, and wetlands. Agricultural land in the airport vicinity includes property managed for cropland primarily planted in corn, with some fields lying temporarily fallow. Dairy operations are the prominent agricultural activity in the area, with corn and alfalfa grown primarily to sustain the dairy herds. The disturbed prairie category includes areas north of the airport that have experienced disturbance (e.g., placement of fill) and have been invaded by shrubs. Managed grasslands are associated with the airport facility. Over 90% of the airport area has been filled by several feet of sandy soils, and all of the original vegetation has been replaced by turf grasses, cultivars, and ruderal species. Remnant pockets of wetlands do exist in isolated areas between the runways and taxiways of the airport. Upland woodlands are represented by small woodlots beyond the perimeter of the airport. Wetland areas compose the majority of the natural communities in the vicinity of the airport. These wetland areas are representative of vegetation communities that have been affected by some degree of disturbance (i.e., roadways, railways, drainage ditches, and maintenance mowing).

Endangered and Threatened Species of Flora and Fauna

The U.S. Fish and Wildlife Service (FWS) has provided information regarding three federally threatened species: bald eagle, prairie bush-clover, and eastern prairie fringed orchid, as well as one federally endangered species, peregrine falcon, potentially occurring within the airport vicinity . FWS noted that, due to the nature and location of the proposed activities, these listed species will not be affected.

The Wisconsin Department of Natural Resources (WDNR) has identified five protected plant species and one species of butterfly potentially occurring in the area. The extensive wetlands in the area and the nearby railroad right-of-way provide potential habitat for the five plant species of concern to the WDNR. The potential for occurrence of the regal fritillary butterfly is low due to the lack of large, dry prairies in the area. However, the butterfly was observed in the vicinity of the project area in 1972.

No specific mention exists in the available literature of endangered, threatened or special concern fish or invertebrate species occurring in adjacent Starkweather Creek.

Wetlands

The airport is located less than 1.5 miles from Cherokee Marsh on the Yahara River drainage. The airport was sited in this location in 1927 due to the extremely flat grade provided by the glacial lake plain, a feature that simplified facility engineering and construction.

Development of the facility was aided by the ditching and relocation of Starkweather Creek, a local tributary of the Yahara River/Madison Lakes drainage. This creek runs around the airport's perimeter, eventually emptying into Lake Monona several miles to the south.

Soils of the airport proper have been heavily disturbed by past construction of the various runways and taxiways. Over 90% of the area has been filled by several feet of sandy soils to provide adequate drainage for pavement. The northern area contains the only substantial wetland remaining in the airport property.

Disturbed Wetlands - Disturbed wetlands consist of remnant pockets and isolated areas between the runways and taxiways of the airport. They are hydrologically isolated (except in overflow conditions) from other wetlands in the Starkweather Creek drainage area and have been heavily altered by soil disturbance, runoff, mowing, vehicle traffic, and the seeding and dispersal of turf grasses, cultivars, and alien weed species. Wetland status has remained mainly because of the lack of fill, these areas being as much as 5 ft lower than the adjacent fill plains. In some cases, these wetlands are adjacent to or contain storm drains, the tops of which are two to three inches higher than the adjacent ground surface.

Functional performance of the disturbed wetlands located between runways and taxiways at the airport is extremely low. The only apparent functions served by these wetlands are minor stormwater attenuation and water quality protection. The strength of these functions is limited by the small relative size and scattered position of these wetlands across the airfield. Storage is limited to approximately two inches of standing water because of the low elevation of the storm drain inlets within or near the wetland boundaries. Similarly, the size, character, and position of the wetlands practically eliminates any potential value as wildlife corridor, despite the proximity of large wetlands outside the airport. No special features exist, and these wetlands serve no aesthetic functions because they cannot be distinguished from surrounding uplands except by a trained professional.

Remnant Wetlands - A large remnant wetland area north of Runway 8-26 supports a wet meadow that is relatively undisturbed compared to other wetlands on the airport. Large portions of the wetland are covered by hydrophytic vegetation, with some standing water remaining near the western border at the time of delineation. This wetland runs close along the northern airport perimeter fence line and has rectilinear boundaries formed by nearby fill material.

The moderate size and proximity to the larger exterior wetlands gives this area some value as habitat. Habitat value is also increased by the wetter conditions in this area in comparison to the disturbed wetlands. However, these functions still remain low on a relative scale. The most important functions served by this wetland are stormwater attenuation and water quality protection. The wetland has good capacity to absorb and attenuate airfield runoff, and the vegetative density, basin size and shape contribute to its ability to absorb nutrients. Local runoff volumes, however, probably do not approach the capacity of the larger wetland areas outside the airfield perimeter.

Exterior Wetlands - Exterior wetlands are wetlands located outside the airport perimeter fence to the north, east, and west. Hydrologic continuity of these wetlands has been disrupted by the highway fill for US 51 on the east side of the airport, Messerschmidt Road to the north, and several long ditches running east to west that have lowered the local water table. Only the wetland north of County Road CV and west of the railroad has escaped ditching.

The exterior wetlands perform considerable flood and stormwater attenuation and water quality protection functions. Although the flood storage potential of these wetlands has been reduced by ditching and drainage alteration, overbank flooding still occurs and the wetlands still filter substantial amounts of runoff from adjacent roads and agricultural fields. Large agricultural areas of relatively steep slopes exist to the north, with dispersed drainage flowing across a large expanse of wet meadow to the south before entering Starkweather Creek.

The most valuable portion of this wetland complex abuts the railroad trending south to north off the northwest quarter of the airport, which amplifies the importance of this wildlife movement corridor. In addition, the proximity of Cherokee Marsh to the northwest is also important for enhancing the value of these wetlands as environmental corridors. Cherokee Marsh lies within the groundwater capture zone of Lake Mendota and provides important regional habitat for a wide variety of wetland species. These wetlands also serve an important aesthetic function as greenspace, as they isolate the airport from conflicting land uses. The large expanses of open wetland space, with distant views and a variety of vegetative textures, also provides visual relief for motorists and airport users.

Noise

Noise is simply defined as unwanted sound. To facilitate representing the vast range of sound intensity, a logarithmic unit, known as the decibel (dB), was borrowed from electrical engineering. Sound intensity is measured in terms of sound levels beginning at 0 dB, which is approximately the threshold of hearing and barely audible under extremely quiet listening conditions. Sound levels of approximately 120 dB begin to be felt in the human ear as discomfort, and higher levels will cause pain and physical damage to the ear.

The minimum change in sound level that an average human ear can detect is approximately 3 dB. An increase in sound level of 10 dB is usually perceived by the average person as a doubling of the sound's loudness. It should be noted that a decrease of 10 dB in sound level actually represents a 90% decrease in the intensity of that sound, but only a 50% decrease in the perceived loudness.

In measuring noise, sound frequency is taken into account by adjusting the very high and very low frequencies to approximate the ear's reduced sensitivity. This is called "A-weighting," and is commonly used in the measurement of environmental noise. Noise levels measured with the A-weighting are given in units of A-weighted decibels, commonly labeled "dBA" or sometimes "dB(A)."

Average sound levels are simply measurements of sound level that are averaged over a specified period of time. The levels, sometimes referred to as cumulative sound levels, provide a measure of the total sound energy during the specified period. For the evaluation of airport noise impacts, the Average Day-Night Sound Level (abbreviated DNL) is used. The abbreviation for Average Day-Night Sound Level was formerly Ldn.

DNL averages the sound levels at a location over a complete 24-hour period, with a 10-decibel weighting added to sounds occurring between 10:00 p.m. and 7:00 a.m. the following morning. The 10-decibel penalty represents the added intrusiveness of sounds that occur during normal sleeping hours, both because of the increased sensitivity to noise while going to sleep or during sleep, and because ambient sound levels during nighttime are typically about 10 dB lower than during daytime.

Ignoring the nighttime penalty, Average Day-Night Sound Level may be considered simply as the A-weighted sound level which would be present if variations in sound levels occurring over a 24-hour period were to be smoothed out to contain the same total sound energy. Average Day-Night Sound Level does not provide information regarding the number or sound levels of individual events that occur during the day. For example, an Average Day-Night Sound Level of 65 dB could be caused by a very few loud events, or a large number of relatively quiet events. Nevertheless, social surveys that have been conducted to appraise community response from noises of all types have found the DNL to represent the best measure of the response.

Noise Modeling - The aviation industry, including the FAA, utilize a computer-based noise modeling procedure, known as the Integrated Noise Model (INM), and its use has been accepted in analyses of airport noise. Noise exposure contours, which are connected points of equal DNL (formerly Ldn) values, are produced at DNL 60, 65, 70, and 75 dB.

Noise Affected Areas - The 1992 DNL 65 dB contour was calculated using input figures. To the south, the 1992 DNL 65 dB contour ends approximately 0.3 mile short of Lake Monona and includes residential and commercial areas. The 1992 contour extends beyond the eastern and western edges of the airport. Areas affected that are off airport property are commercial, industrial, institutional or open space and are not noise sensitive. To the northeast, the 1992 DNL 65 dB contour just reaches Interstate 90/94 and

encompasses some residential areas. Exhibit 3.6 in the FEIS shows the 1992 noise exposure contours.

Air Quality

Dane County is in attainment for all Standards except for Total Suspended Particulate (TSP). The Wisconsin Department of Natural Resources, Bureau of Air Management, has reported that TSP is in non-attainment at specific sites in Madison. The area of the airport proper is within attainment. DCRA is located in the Southern Wisconsin Intrastate Air Quality Control Region. The National TSP standards were replaced by National Particulate Matter - 10 micrometer PM-10, aerodynamic diameter standards on 31 July 1987 by the EPA. The State of Wisconsin still recognizes the TSP standard.

Airport Drainage Features

Starkweather Creek is currently classified by the Wisconsin Department of Natural Resources (WDNR) as suitable for Warm Water Sport Fishery use. The West Branch of Starkweather Creek has fairly low baseflow. The average baseflow in 1989 and 1990 was only 1.2 cubic feet per second (cfs) at Milwaukee Street, and the estimated seven-day low flow occurring once every ten years (7Q10) is only 0.02 cfs. DCRPC considers the nutrient concentrations in the baseflow to be high, especially the nitrogen levels. Water quality conditions in Starkweather Creek have been determined to be poor by the WDNR. The highest concentrations of mercury and zinc in bottom sediments sampled in the Yahara-Monona watershed were found in the West Branch of Starkweather Creek. Because the creek has been artificially altered and shaped due to urban development, there has been a concern that the peak flow in the creek would be increased by stormwater runoff when more development occurred and the contaminated sediments in the creek would be flushed into Lake Monona.

Description of Airport Drainage - MSN constructed a $1 million deicing fluid collection system for ultimate discharge to either the Madison Metropolitan Sewage District or Starkweather Creek, depending on concentrations within the storage lagoon. According to telephone conversations between the airport owner and Wisconson DNR on June 3, 1996, WDNR has indicated that a Wisconsin Pollutant Discharge Elimination System permit and effluent limits for direct stream discharge will be issued to the airport by June 30, 1996. With the new system, stormwater from the airport is collected and stored in a lagoon first and then discharged into Starkweather Creek only if it meets permit requirements. A long-range plan for Starkweather Creek was proposed by the Dane County Regional Planning Commission (DCRPC). The plan proposed construction of stormwater detention basins in the watershed to address excessive storm runoff from existing and new development, poor water quality and declining groundwater recharge. If this is implemented, the impact of stormwater runoff from other development on the West Branch of Starkweather Creek may be greatly reduced.

Floodplains - MSN is located between the eastern and western branches of Starkweather Creek on the northeastern side of the Madison Metropolitan area. The watershed

encompasses portions of the towns of Burke and Blooming Grove as well as sections of the City of Madison. Both branches of the creek have experienced significant watershed urbanization, dredging, and channelization. In many reaches, Starkweather Creek is considered to function primarily as an open storm sewer.

The East Branch of Starkweather Creek originates on the northeastern side of Madison and flows for approximately 3.5 miles to the confluence with the West Branch at a location downstream from the airport and about one-half mile above Lake Monona. Characterized as a sluggish, urban ditch, the East Branch has experienced problems with aquatic vegetation and sediment.

On the other side of the watershed, the West Branch of Starkweather Creek is about 7 miles long and originates in the springs and seeps above I 90/94 near Cherokee Marsh. The watershed above the airport is about 3,430 acres, or about 45% of the total drainage for the West Branch. The creek is routed through about 2.2 miles of agricultural drainage ditches before flowing through culverts under US 51 and around the airport. There are about 3.6 miles of channelized drainage ditches around the airport, including 1,700 ft of culverts: 600 ft of two 96-inch culverts at the end of Runway 18-36, 900 ft of two 12-ft x 6-ft box culverts under the aircraft holding bay, and 200 ft of miscellaneous culverts under roadways and other structures. Stormwater runoff and drainage from the airport is discharged into the West Branch at numerous locations around the perimeter of the airport before it flows southward through urban areas and several parks to the confluence with the eastern branch above Lake Monona.

Although the West Branch is also considered to have a slow-moving current and a low gradient, in contrast to the eastern branch, there is little aquatic vegetation along the creek due to its channelized nature. Since the 1970s, baseflow in the creek has decreased from 5 cfs to about 1-2 cfs which has been attributed to decreases in local groundwater levels. However, due to increased urban development and channelization in the watershed, peak flows and flow velocities during rainfall events have increased. Streambank stabilization controls have been constructed in the downstream reaches of the West Branch to counter erosion and sloughing problems in these areas.

The Dane County Drainage Board is primarily responsible for the maintenance of drainage within the Starkweather Creek watershed. However, most of the maintenance and drainage improvements have actually been done by the City of Madison. MSN has relocated drainage channels associated with the drainage around new facilities at the airport. "Environmental corridors" have been identified along much of the Starkweather Creek floodplain areas, stream channels, drainageways, and wetland areas by the DCRPC. These include environmentally sensitive lands which require protection from development, such as floodplains and wetland areas, as well as lands needed for open space and recreational uses.

Flooding conditions and local drainage in and around the airport are controlled by the backwater effects of Lake Monona. The ten-year peak flow for Starkweather Creek at the airport has been estimated to be about 52 cfs with a total runoff volume of about 3.3 acre-

ft. Most of the airport area is elevated out of the 100-year floodplain, and there has been no history of chronic flooding problems in the area. The floods which occurred over the area during 1993 were the most severe during the last twenty to twenty-five years. During this time, only the East Apron area along US 51 was flooded. Water reached a depth of one foot for about two days before the downstream water surface elevations receded enough to allow drainage of this area.

Cultural Resources

Archaeology - The review of official archaeological site records and previous investigations for the area to be affected by the proposed runway improvement at MSN revealed that the area is known to contain five previously recorded archaeological sites within one mile of the existing airport. Of these five previously recorded archaeological sites, none are listed in or considered eligible for inclusion in the National Register of Historic Places (NRHP). Two of the previously recorded sites, the "Nutcracker Site" (47-Da-873) and an unnamed historic cemetery site (ASI 022725), were identified in the background literature and records review, but not revisited during the archaeological field survey. The "Nutcracker Site" (47-Da-873) is described as "a badly disturbed scatter of historic Euro-American artifacts, possibly representing a homestead" (Rusch, 1993). The adjacent unnamed cemetery site (ASI 022725) is described in the official Wisconsin archaeological site database as one of two earlier cemeteries in the vicinity of Burke Lutheran Cemetery from which "some of the burials were transferred to the present cemetery, but ... no markers (are) left." The nearest NRHP-listed archaeological sites are two mound-complex sites located more than one mile south and southwest of the airport in the City of Madison.

Based on the presence of known archeological resources in the MSN vicinity and the incomplete coverage of the area by previous archaeological surveys, the State Historical Preservation Office (SHPO) requested that an archaeological survey be conducted for each of the alternative areas preliminarily proposed for development. That survey resulted in the location and preliminary evaluation of two previously unidentified archaeological sites.

One of the newly recorded sites, the Thunderjet Site (47-Da-1013), was interpreted to be a possible prehistoric campsite with sufficient integrity to warrant further investigation to determine its eligibility for inclusion in the NRHP. Horizontally, this site is small in size, less than 24,000 square ft (2,200 square meters), and appears to be confined to the area of a low sandy rise located within the Inner Approach Area for Alternative 18-36 Extension. Vertically, the site appears to contain undisturbed archaeological deposits below the plow zone. Geological conditions at the site contribute to the site's archaeological research potential. The other newly recorded site, 41-Da-1014 (the Wettig Site), is described as having both a late nineteenth century historic Euro-American component and a prehistoric component, although both were considered too disturbed by plowing and grading to warrant further investigation.

The preliminary evaluations and recommendation for further testing of the Thunderjet Site (47-Da-1013) provided by the surveying archaeologists were supported by the SHPO. Further testing of the Thunderjet Site would likely be required if the site is expected to be impacted. The Wisconsin SHPO further concurred that Site 47-Da-1014, the Wettig Site, lacked sufficient integrity to qualify for National Register eligibility .

Architecture - The review of official NRHP listings for Dane County, Wisconsin revealed that a number of previously listed architectural properties exist within the City of Madison.

Based on the presence of the historic resources, the SHPO requested that an historic structures survey be conducted to identify any potentially historic properties within the DNL 70 dB noise exposure contour surrounding the airport. The Wisconsin Department of Transportation/Bureau of Aeronautics conducted a historic structures survey. The results of that survey indicated that no historic architecture properties exist in the area of potential effect.

Hazardous Materials

A search was conducted of the regulatory information to determine whether the subject site and surrounding areas have been identified as causing or having the potential for environmental pollution. The available WDNR records related to the study area were also reviewed. The study area extends in a 3-mile radius from the center of the airport.

The Wisconsin Department of Industry, Labor, and Human Relations (WDILHR) enforces the laws and regulations involving storage tanks, both aboveground and underground. According to the WDILHR database, there are at least 296 underground storage tank (UST) sites within a 3-mile radius of the airport. At least 18 UST sites are within the airport property line. The owners of these tanks include the airport (3 sites, 13 USTs), Frickelton Aviation (1 site, 4 USTs), Wisconsin Army National Guard (2 sites, 2 USTs), Republic Airlines, Inc. (1 site, 1 UST), Four Lakes Aviation Corporation (1 site, 17 USTs), Army Aviation Service Facility #2 (1 site, 2 USTs), DCRA burnpit (1 site, 1 UST). Most of the USTs are located on the southern, southeastern, and southwestern portions of the airport.

According to the WDNR, there are at least 68 LUST (Leaking Underground Storage Tanks) sites within a 3-mile radius of the airport. Two sites are on the airport grounds. MSN indicated that the USTs within the airport grounds were removed, and remediation activities are being conducted. Tanks owned by National Guard Armory have also been removed and the sites remediated according to MSN. There is a possibility that non-registered LUST sites may be present within the runway extension areas.

According to WDNR's master list of known solid and hazardous waste disposal sites, there are five disposal sites within an approximate 3-mile radius of the airport. Findorff Demo Landfill lies on the west side of the airport. This landfill is currently inactive. There are no significant problems associated with the landfill. The City of Madison,

Truax Landfill is located to the south of the airport. The site has been closed since 1972. On May 25, 1990, the WDNR, the County and the City entered a consent order regarding the Truax landfill. According to WDNR records, the consent order required the City and County to submit a proposal for long-term environmental monitoring of groundwater, leachate, landfill gas, and gas condensate in the landfill area. Mendota State Hospital is located southeast of the airport. No WDNR records of any hazardous waste being dumped in this site were available. The City of Madison Sewage Disposal Site is to the southwest of the airport. According to WDNR, PCBs were discovered in the sludge of the sewage disposal plant. WDNR is working with the City of Madison and bioremediation is under consideration for remediation of the sludge. West Port Sand and Gravel is located on the south side of the airport. The site is a gravel pit and no records of any hazardous waste being dumped in this site were available at the WDNR office, Madison.

VI. ENVIRONMENTAL IMPACT AND MITIGATION MEASURES

Noise

Aircraft noise is currently a significant factor in the airport environment at Madison. One purpose of Runway 3-21 is to direct aircraft operations to less populated areas as the number of aircraft operations is forecasted to increase. Specifically, the purpose is to reduce the impact of aircraft noise over areas south and southwest of the airport by providing for the continuation of head to head operations through the implementation of a modified informal contra-flow pattern of air traffic which will continue to direct aircraft over less populated areas north and northeast of the airport and will improve the airport's operating safety and flexibility.

A noise evaluation of land areas which may be subject to cumulative noise levels at or above an Average Day-Night Sound Level (DNL) of 65 decibels (dB) has been conducted for the proposed action and its practicable alternatives. Noise contours for DNL 60, 65, 70, and 75 dB were generated using the INM for each alternative, including No Action and three build alternatives: 3-21 (the proposed action), 4-22 Extension, and 18-36 Extension. Noise exposure contours for 1997 for the four alternatives are shown in Exhibits 4.3, 4.4, 4.5 and 4.6 of the Final EIS.

Noise Analysis - The FEIS analysis for 1997 shows that all of the proposed build alternatives would incorporate fewer residential units within the projected DNL 65-75 dB contours than under the No Action Alternative. Approximately 16% to 34% of the estimated 2,030 residential units associated with the DNL 65-75 dB contours under the No Action Alternative would be relieved (i.e., would experience a reduction in noise levels) by the selection of one of the proposed build alternatives. The build alternatives would relieve an estimated 318 to 791 units, representing a population between 693 and 1,701 persons. The selection of a build alternative would, however, expose a range of 16 to 47 new single-family residences and 2 to 4 community/commercial facilities to new or higher noise levels.

Although the FEIS 1997 analysis for alternative 18-36 Extension characterized the smallest variation and overall increase in noise contours, it did not provide the operational flexibility**,** increased levels of operational safety, or ability to continue the contra-flow procedures well into the future, as did the construction of alternative 3-21. There are 2,030 residential units within the DNL 65-75 dB contour for the No Action Alternative. For Alternative 3-21 there are 1,585 residential units and 16 community/commercial facilities within the DNL 65-75 dB contour. Of the No Action impacted units, alternative 3-21 would relieve 445 units. Under Alternative 3-21, 21 single-family residential units (approximately 46 persons), 2 parks (DNL 65-70), and 2 commercial structures (DNL 70-75 dB) would be newly exposed to noise impacts. A noise impact sensitivity analysis was conducted using the Area Equivalent Method (AEM). The AEM is a noise screening methodology developed for FAA that can be used to decide whether the noise impact, due to a variety of changes, is significant. It is a mathematicsl procedure that provides an estimated noise contour area of a specific airport given the types of aircraft and the number of operations for each aircraft. The AEM allows the percent change in land mass under the various noise contours to be determined.

The decision to conduct the noise analysis (AEM) was partially predicated on noise impacts. Federal Aviation Regulation Part 91 requires a phase out of noisier Stage 2 aircraft to be replaced by quieter Stage 3 aircraft . FAR Part 91 establishes a schedule of complete compliance by December 31, 1999. In the review of the Draft EIS, clarification was sought regarding the benefits attributable to the construction of the new runway 3/21 vs. the phase out of Stage 2 and phase in of Stage 3 aircraft. It was believed that this analysis would provide some enhancement of the disclosure of noise impacts when phase out of noiser Stage 2 aircraft is considered in detail, particularly from a timing standpoint. The purpose of the sensitivity analysis was to see if there would be a significant change in the area impacted by noise when the 1997 fleet mix used in the Draft EIS is compared to the revised fleet mix presented in the Final EIS. The analysis indicated that the percent change in the area included in the noise contours is not significant. Further discussion of the reasons for conducting the additional analysis, a brief description of the AEM and the results of the analysis are presented in Appendix I of the FEIS, Sensitivity Analysis for FAR Part 91 (Stage 3 Aircraft) Compliance**.**

In response to several comments received on the FEIS, and to enhance the presentation/interpretation of the AEM sensitivity analysis, additional INM model runs were conducted to analyze the impact of a revised 1997 fleet on the number of impacted residential units. This analysis, which is documented in Appendix B of this ROD indicates that instead of 445 units being relieved from impacts as indicated in the FEIS, actually 624 residential units would be relieved. This represents an additional 179 units removed from noise impacts. Twenty one units will be newly impacted.

The Draft EIS used the assumption that in 1997 air carrier aircraft at MSN were expected to be 80 percent Stage 2 aircraft and 20 percent Stage 3 aircraft. The Draft EIS assumption was based on the forecast used in MSN's Part 150 Study and consultation with Madison ATCT and MSN. Based on communications with air carriers serving MSN

and review of MSN's daily operations records, it appears that the air carrier fleet at MSN might more reasonably be expected to be less Stage 2 aircraft and more Stage 3 aircraft in 1997 than was forecasted in the Part 150 Study and used in the Draft EIS. Appendix I in the FEIS presents a detailed discussion of the issue.

Since the publication of the FEIS, additional modeling of the year 1997 and 2000 contours utilizing the INM model has been performed by the FAA. The revised fleet mix, and the forecast used in the Part 150 Study, were used to develop new 1997 contours. The forecast from the master plan, and a new fleet mix were used for the new year 2000 contours. The result of these additional analyses have been included in the ROD, Appendix B. Table 1 of Appendix B substantiates the accuracy and validity of the AEM analysis. This table depicts a comparison of the number of units, persons, and sensitive land uses impacted by the original 1997 fleet mix, revised 1997 fleet mix and the 2000 new fleet mix.

Noise Mitigation - Noise sensitive locations or areas that would become exposed to noise levels of DNL 65 dB or greater if a build alternative were implemented would currently be eligible for federal funding support for noise mitigation. MSN's current FAR Part 150 Study established a program for measuring noise at the airport, determining noise exposure, identifying compatible land use, and evaluating noise mitigation measures. This program consists of three closely related plans which are aimed at satisfying this objective:

A Noise Abatement Plan consisting of noise abatement measures;

- A Land Use Management Plan which includes measures to mitigate or prevent noise impacts on existing noise-impacted land uses and future land use developments in the airport environs. Included in the Land Use Management Plan is the Sales Assistance Program;
- An Implementation Plan consisting of procedures and documents for use in bringing the recommended noise abatement and land use measures to reality, monitoring the progress of the program, and updating the Noise Compatibility Plan.

For those twenty one newly-exposed, single-family residential units located within the 65-75 DNL of alternative 3-21, Dane County, the airport owner, commits to specific noise mitigation options for the home owners. These options include the full range of above-stated measures including property sales assistance or purchase of aviation easements, which are consistent with the airport owner's existing noise mitigation program.

Compatible Land Use/Noise Impact Determination

Land use is a prime issue surrounding any proposed development at MSN. Fully developed, long standing neighborhoods are located to the south of MSN while the areas

to the north and northeast are relatively undeveloped and are substantially compatible with aircraft overflights.

Residential uses within the DNL 65 dB noise contour are generally not considered to be compatible land uses. As described in the preceding Noise section, all of the proposed build alternatives would incorporate fewer residential units within the projected DNL 65-75 dB contours than under the current No Action Alternative. Additionally certain other types of land uses have been defined as noise sensitive. These include historic sites, schools, parks, hospitals, nursing homes, and religious facilities. Although the total number of units impacted by the selected Alternative 3-21 would be reduced by 445 units, there would be 21 newly impacted homes and 4 newly impacted community/commercial facilities.

In response to several comments received on the FEIS, additional INM model runs were conducted to enhance the presentation/interpretation of the AEM sensitivity analysis. This additional analysis, which is documented in Appendix B, compares the Runway 3-21 Alternative utilizing the revised fleet mix to the no action alternative. The result of this analysis indicates that instead of 445 units relieved from impacts as documented in the FEIS, actually 624 residential units would be relieved. This represents an additional 179 units removed from noise impacts.

These noise sensitive locations exposed to new or increased levels of noise may be eligible for noise mitigation. Refer to the Noise Mitigation section for mitigation measures relative to these impacts.

Social and Induced Socio-Economic Impacts

No residential or commercial properties, recreation property, schools or other educational facilities will be acquired due to noise impact. Construction of the proposed action will not displace existing or planned development. Three single family residences and one commercial property are proposed to be acquired for the Runway 3-21 north approach area.

The runway approach areas, which are rectangular in shape, are located off each runway end. Beginning at a point 200 ft off the pavement end, the approach area extends to a length of 5,000 ft and extends laterally 1,250 ft either side of the runway centerline. Within the approach areas, high single event and cumulative noise levels are experienced. Additionally, low flying aircraft will frequently be over these areas. Map H-5 of the FEIS shows the property that is included within the approach area.

The airport’s Noise Compatibility Program has identified the north side of the airport as the only area that is currently undeveloped and recommends using the north side to reduce as much as possible overflights of the developed area to the south. For the airport to remain viable over the long-term, it is important that land use compatibility on the north side be assured. This would enhance airport operational safety and protect the runway approach areas.

The approach area at the north end of Runway 3-21 includes lands that are zoned commercial and light industrial. The airport owner has indicated that certain lands would be acquired to ensure operational safety and to protect the approach areas. FAA recommends that lands within the Runway Protection Zone (RPZ) located totally within the runway approach areas be controlled by the airport owner in fee simple ownership. The function of the RPZ is to enhance the protection of people and property on the ground, which is best achieved through airport sponsor control of the property within the RPZ. A portion of the land within the north approach area to Runway 3-21 is also contained in the runway RPZ. This RPZ is depicted on the ALP and NCP Property Acquisition Plan in Appendix C of the ROD as the first of two trapazoidal figures extending northeast of Runway 3-21. The airport sponsor would acquire the property in the RPZ in fee simple.

Currently within the RPZ, there are four to five warehouse-type structures on property owned by a single individual. This parcel is shown as C-16 on the ALP and NCP Property Acquisition Plan exhibit. Based on preliminary engineering analysis, some of the structures would penetrate the FAA-defined transitional surface for the proposed Runway 3-21. (The transitional surface extends at a slope of seven to one from the sides of the approach surface.) Penetrations are identified as obstructions to air navigation and are presumed to be hazards to air navigation until an FAA study has determined otherwise. It is the intention of the airport sponsor to acquire the property within the RPZ and remove the structures to keep the land clear of existing and future obstructions.

Four of the five structures were moved to the site from the airport when they became World War II surplus property. The fifth structure was constructed more recently. There are six employees operating businesses in the structures with approximately fourteen employees. Both the residents and businesses will be provided fair and reasonable relocation payments and assistance pursuant to the provisions in Title II of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. For the residents comparable decent, safe and sanitary dwellings are available for occupancy on the open market or will be built if necessary prior to actual displacement. This airport owner also intends to acquire in fee simple other vacant parcels in the RPZ depicted on the ALP and NCP Property Acquisition Plan exhibit.

No commercial or light industrial structures other than parcel C-16 would be acquired within the approach area. Although FAA policy encourages acquisition of lands within the approach areas and makes provisions for the acquisition, FAA’s policy does not mandate such acquisition. Exhibit 1 in Appendix C of this ROD shows property the airport owner intends to purchase either in avigation easement or fee simple.

The airport owner intends to purchase certain air rights in the remaining portion of the approach areas not in the RPZ. Avigation easements are a grant of property interest in land over which a right of unobstructed flight in the airspace is established. Purchase of avigation easements would not infringe on the existing use of properties in the approach areas, particularly the industrial use of parcel B-166.

Properties acquired by the airport sponsor to ensure the safe operation of the proposed Runway 3-21 would be acquired according to the guidelines presented in the FAA Advisory Circular No. 150/5100-17 entitled, Land Acquisition and Relocation Assistance for Airport Improvement Program Assisted Projects. The purchase of interests in land in the RPZ and approach areas is eligible for FAA funding.

The airport owner has indicated that the land acquired in the Runway 3-21 north approach area would be kept in agricultural use and as such would provide revenue for the airport.

A cul-de-sac would be installed at a portion of Messerschmidt Road from US 51 to a point west of the new runway. In place of Messerschmidt Road, through traffic would use Hoepker Road. Access to or operations of medical facilities will not be affected.

Expenditures to construct Runway 3-21 will pay wages, purchase materials and supplies, and provide profit to the contractors, with the associated multiplier effect and will benefit the regional economy.

Air Quality

The proposed project would have less of an impact on the area's air quality than the No Action Alternative. Consequently, the proposed action does not have the potential to adversely affect air quality.

Water Quality

Potential water quality impacts were assessed for the proposed MSN runway improvement project in accordance with FAA Order 5050.4A Airport Environmental Handbook. There are no sole or primary drinking water sources in the area of the project and the assessment focused on potential water quality of Starkweather Creek.

The 3.6 mile reach through the developed portion of the airport, which is 13.6% of the creek's watershed, is a low-gradient, straight, artificial drainage ditch with a bottom of silt and clay with some gravel. Within the airport boundaries, approximately 1,700 ft. of the creek is currently culverted.

As a result of airport improvements, including the construction of Alternate 3-21, stormwater runoff is expected to increase but adverse impacts to water quality is not expected to be significant. Drainage patterns may be altered slightly for the area north of Starkweather Creek but the impact is not expected to be significant. Water quality of Starkweather Creek and other water bodies affected by the proposed project is expected to be protected by utilizing appropriate construction practices to ensure that no significant adverse impacts occur. Although culvert extension, construction of new culverts, and channel relocation were all options considered, the sponsor's preferred option is to construct a new culvert.

Assurances have been obtained that the Governor of Wisconsin will sign the required Air and Water Quality Certification as required by the Airport and Airway Development Act of 1970.

Historic, Architectural, Archaeological, and Cultural Resources:

Airport development and improvement projects, in general, have the potential for causing impacts to cultural resources through the conduct of activities which may affect those qualities that contribute to a property's significance.

No cultural resources sites of any type are known to exist within the area affected by the construction of Runway 3-21. Consequently, no impacts to historically significant cultural resource sites are anticipated a result of this build alternative. Archaeological field studies have been completed for the proposed construction sites, no archeological sites eligible for the National Register of Historic Places have been identified. The results of this investigation are documented in Appendix H-2 and H-3 of the FEIS..

Construction and operation of Alternative 3-21 would not impact known cultural resources.

Department of Transportation Act Section 4 (f) Lands

Section 4(f) of the Department of Transportation (DOT) Act of 1966 states that approval will not be given to projects which require the taking of any publicly-owned land of national, state, or local significance used for a public park, recreation area, historic site, wildlife or water fowl refuge, unless there is no feasible and prudent alternative to the use of such land and such program includes all possible planning to minimize harm. Construction of Runway 3-21 would not require the acquisition of property in or at any DOT Section 4(f) site. There are no section 4(f) areas located on the property of MSN.

No parks would be newly included in the 65 DNL contour as a result of the Runway 3-21 construction. There are presently seven parks/park areas within the 65 DNL. With respect to aircraft noise levels, the project would not result in a significant increase in noise levels at any section 4(f) resource. Presence of a Section 4(f) resource within a 65 DNL contour, while indicative of a high noise environment, does not automatically mean that the park, recreation area, wild life refuge, or historic site is prevented from functioning for its intended purpose. Noise levels associated with the proposed project would not exceed any of the Federal land-use compatibility guidelines for any park, recreation area, wildlife refuge or historic site. Accordingly, no constructive use of proposed properties would occur. Therefore, the proposed action will not result in any permanent, temporary, or constructive use of any resource protected by Section 4(f) of the Department of Transportation Act.

Biotic Communities

The construction of Runway 3-21 would result in the installation of approximately 1500 ft of culverts to span the Runway Object Free Area. The construction would cause short-term impacts to the aquatic environment but would reduce the potential for aquatic habitat loss. Due to the already existing high levels of noise in the area, the redistribution of some noise impacts is not likely to result in a significant impact on the wildlife populations in the area.

Endangered and Threatened Species of Flora and Fauna

The U.S. Fish and Wildlife Service has determined that due to the nature and location of the proposed activities, there will be no federally threatened species or endangered species effected.

The WDNR have identified five protected plant species and one species of butterfly potentially occurring in the area. Each of these species has been observed in the Township in which the airport is located. The extensive wetlands and the nearby railroad right-of-way provide potential habitat for the five plant species of concern to the WDNR, therefore the alternative impacting the most wetlands would have the highest impact on these plant concerns. Alternative 18-36 holds the potential for the greatest impact on these species due to the amount of wetlands impacted. The potential for occurrence of the regal fritillary butterfly is low due to the lack of large, dry prairies in the area and there is no mention in the available literature of endangered, threatened or special concern fish or invertebrate species in the adjacent Starkweather Creek.

Wetlands

Alternative 3-21 would result in the direct loss of approximately 27 acres of exterior wetlands, 14 acres of remnant wetlands, 1 acre of disturbed wetlands between existing runways and corresponding wildlife habitat. Wetland lost from this alternative are considerably less than those impacted by the other build alternatives. This alternative will require the culverting of Starkweather Creek.

The U.S. Corps of Engineers (USCE) Clean Water Act Section 404 permit process has been initiated. This process will include obtaining USCE approval of the wetland delineation for the preferred alternative, preparation of a permit application, and a detailed mitigation plan for wetland impacts. Proposed mitigation measures would include functional and acreage replacement based on impacts to insure no net loss of wetlands. Proposed mitigation includes restoration of wetlands on airport owned land within the same watershed or possibly in the Yahara River drainage area.

FAA has determined that there are no other practical alternatives to constructing Runway 3-21 and that the preferred alternative includes all practicable measures to minimize harm to wetlands which may result from such use. No impacts to the wetlands are expected to occur as a result of the No Action Alternative.

Floodplains

The No Action Alternative would have no floodplain impacts. A significant portion of the preferred Alternative 3-21 (as well as 4-22 Extension) would be located within floodplains and subject to impacts due to fill, impervious cover, and alterations of the local drainage patterns. Alternative 3-21 involves 21 acres of floodplain impacts and the shortest channel culvert (1,150 ft) of Starkweather Creek. Alternative 4- 22 Extension would have the largest impact with 92 acres of direct floodplain encroachments and more required creek culverting (1,329 ft.).

Coastal Zone Management Program and Coastal Barriers

The project is not located in a coastal zone and is not subject to any state or federal coastal zone management programs.

Wild and Scenic Rivers and other River Designations

According to the National Park Service, there are no rivers included in the National Wild and Scenic Rivers System that occur in the Madison, Wisconsin area. The project would not impact any designated Wild and Scenic Rivers, and would therefore be in compliance with the Wild and Scenic Rivers Act (Public Law 90-542 as amended). No mitigation is proposed.

Farmland

Coordination with the Soil Conservation Service confirmed that there are no lands in the study area that are considered state and/or locally important farmlands. The preparation of Form AD 1006 (Farmland Conversion Impact Rating) was completed for this project and appears in Appendix H of the FEIS. No mitigation is required or proposed.

Energy Supply and Natural Resources

There will be no irreversible or irreplaceable commitment of natural resources or energy sources as a result of the proposed improvements beyond those required to physically construct the project. No mitigation is proposed.

Light Emissions

Light emissions are not anticipated to impact any of the abutting, sparsely populated properties. If during the final design, an impact is noticed, the light will be shielded by natural or artificial means to reduce any annoying effects.

Solid Waste Impacts

The proposed runway construction is not anticipated to have an effect on solid waste collection or disposal. Landfills in the area are located at safe distances from MSN to minimize the potential of bird strikes from landfills. No mitigation is proposed.

Construction Impacts

Construction impacts are short-term impacts associated with the construction of the proposed action. The development of Runway 3-21 would temporarily increase impacts as a result of construction related to solid waste, water quality, air quality and construction related noise. The distance of the project area to the proposed airport property line is sufficient so as not to affect residential areas.

The airport owner commits to normal mitigation for construction related impact. To mitigate short term construction impacts, project specifications will incorporate provisions of FAA Advisory Circular 150/5370-10 Standards for Specifying Construction of Airports (Change 10), Item P-156 Temporary Air and Water Pollution, Soil Erosion and Siltation Control. These provisions will minimize erosion of soils, prevent sediment from entering the storm sewer system, control dust on the project, and complete turf re-establishment at an early date. Work will be closely supervised during construction to ensure compliance with required permits, regulations, and agreed to techniques established to mitigate construction related water quality impacts.

Hazardous Materials

Numerous sites were identified through the regulatory data base search; however, because of their locations and distance outside of the proposed construction areas, impact on the project due to the identified sites would be minimal. No mitigation is proposed.

VII. ISSUES

Agency and public comments that have been expressed through the EIS scoping process, at public hearings, and/or during the public comment period for the Draft EIS have been addressed in the Draft EIS and/or Final EIS. No controversial issues were identified during the public participation process.

The following technical issues were identified during the comprehensive public participation process and have been specifically addressed in the Final EIS, Appendices H and I:

- Impacts on wetlands, streams, and erosion control needs; effects on state listed threatened or endangered species
- Impacts to projects acquired with funding from Land and Water Conservation Fund;

- Token Creek Park Acquisition, Cherokee Marsh Acquisition, and Madison Cherokee Stephan Acquisition
- Locating and evaluating archaeological sites
- Land acquisition north of Messerschmidt Road
- Impacts to local roadway system
- Noise impacts
- Effect on air traffic
- Air quality impacts
- Purpose and need

Comments on additional issues were offered by the public during comment period for the FEIS. A list of the issues and responses are described in the FAA's responses to comments included in Appendix C of the ROD.

The following is a list of the issues raised during the public comment period for the FEIS:

U.S. Environmental Protection Agency

- Contra-flow operations;
- Full disclosure of information;
- Flight tracks;
- Noise receptor sites;
- Departure and arrival tracks;
- SEL, Sound exposure level;
- Airport effected area definition;
- Part 150 Study summation;
- Noise mitigation program

Wisconsin Department of Transportation

- Expansion of US 51;
- Runway 3-21 indicator lights;
- Messerschmidt Road cul-de-sac

State of Wisconsin Department of Natural Resources

Culverting of Starkweather Creek

Dane County Regional Planning Commission

- Messerschmidt Road closure;
- Starkweather Creek relocation;
- Water quality impacts;
- Wetland and flood storage mitigation

City of Madison - Department of Public Works

- Width and alignment of Starkweather Creek;
- Additional impervious surface;
- Flood plane impacts;
- Wetland impacts;
- Water quality;
- Erosion control

American Family Mutual Insurance Company

- Messerschmidt Road

Michael D. Barrett

- Supports No Action Alternative
- Messerschmidt Road and City of Madison Bicycle Route Map
- Madison Bikeways System Map
- Increased Bicycle Commute

Bicycle Transportation Alliance of Dane County

- Proposal to mitigate closing Messerschmidt Road
- Messerschmidt Road and City of Madison Bicycle Route Map
- Madison Bikeways System
- Token Creek Area Development

Madison Audubon Society

- Favor No-Action Alternative
- Limit Air Traffic
- Favor High-Speed Rail Links
- Starkweather Creek
- Messerschmidt Road
- Wetland Mitigation
- Wetland Restoration
- Groundwater Recharge Strategies
- Stormwater Management Plan

Wisconsin's Department of Transportation comment addressing the relocation of Messerschmidt Road has not been resolved to the satisfaction of the commentor. For FAA's decision on this issue refer to comment DOT-01 in Appendix C of the ROD.

All of the other issues have been addressed in the response to comments in Appendix C and by clarifications provided in the body of this ROD.

VIII. AGENCY FINDINGS

The FAA makes the following determinations for this project based on appropriate evidence set forth in the FEIS.

> A. No feasible and prudent alternative exists for the significant adverse effects on environmental resources documented in the FEIS which are likely to be caused by the project. All reasonable steps have been taken to minimize such significant adverse effects on environmental resources. [49 U.S.C. App. 2208 (b) (5)]

This Record of Decision highlights the FAA's consideration of alternatives and decision making considerations, as well as the mitigation commitments. Therefore, approval of the propose improvements would be consistent with 49 U.S. C. App. 2208 (b) (5).

> B. The Governor of the State of Wisconsin has certified in writing that there is reasonable assurance that the project will be located, designed, constructed and operated so as to comply with applicable air and water quality standards. [49 U.S.C. App. 2208 (b) (7) (A)]

See Appendix F in the Final EIS for a letter signed by Keith F. Richardson, P.E., Chief, Airport Engineering Section, Wisconsin Department of Transportation, Bureau of Aeronautics, stating that Governor Tommy G. Thompson will sign the required Air and Water Quality Certification for the project in accordance with Wisconsin Statute 114.33(3). The area in which the project is located is in attainment for air quality.

Based on guidance in FAA Order 5050.4A Airport Environmental Handbook, an aircraft emissions inventory was undertaken for the four alternatives evaluated in the EIS. FAA Aircraft Engines Emissions Database (FAEED), developed by the FAA and U. S. EPA (Environmental Protection Agency) was used for the emissions inventory. The FAEED was used to give a sufficient level of analysis to determine that the construction of the preferred alternative (Runway 3-21) would have less of an impact on air quality of the area than the No Action Alternative. Due to this analysis, FAA's Emissions and Dispersion Modeling System was not used. In addition, a general conformity determination by FAA is not required because the area in which the project is located is in attainment.

> C. The project is reasonably consistent with existing plans of public agencies authorized by the state in which the airport is located to plan for the development of the area surrounding the airport. [49 U.S.C. App. 2208 (b) (1) (A) and Executive Order 12372, Intergovernmental Review of Federal Programs, respectively]

The Dane County Regional Planning Commission (DCRPC) is the public agency authorized by the State of Wisconsin to plan for the development of county lands in which MSN is located. Given the review of the FEIS, the continued involvement

throughout the environmental process by DCRPC and the Dane County Board of Supervisors, the FAA is satisfied that the project is reasonably consistent with the plans of the County. Moreover, as the airport is located adjacent to lands within the Town of Burke and the City of Madison, Dane County Corporation Council is currently preparing land use guidelines for areas adjacent to MSN.

The Town of Burke which has jurisdiction of Messerschmidt Road has arrived at the proposed closure of the road. The Dane County Regional Planning Commission and the Wisconsin Department of Transportation would like Messerschmidt Road relocated. The airport owner has agreed to own or control sufficient land to allow the closing of Messerschmidt Road now and allow for the option of reestablishing a new roadway corridor in the future.

The City of Madison, Department of Public Works, provided comments during the FEIS comment period regarding drainage, floodplains, wetlands, water quality and erosion control. The airport owner commits to providing an updated drainage easement, conducting a storm water study, and preparing an erosion control plan. Responses to these comments can be found in Appendix C of the ROD.

D.Fair consideration has been given to the interest of communities in or near the project location. [49 U.S.C. App. 2208 (b) (4)]

Section 8 of the Final EIS, Public Involvement and Coordination, and Appendix H of the FEIS, Public Involvement Program, identified the opportunities throughout the project that nearby communities have had to express their views on the proposed project. This determination is also supported by a long history of communication between MSN and the surrounding political jurisdictions.

Comments were received from the Dane County Regional Planning Commission regarding Starkweather Creek relocation vs. culverting, stormwater water quality impacts, and specific on-site wetland and flood storage mitigation proposals. Responses to these comments are contained in Appendix C of the ROD.

E.Appropriate action has been or will be taken to restrict the use of land in the vicinity of the airport to purposes compatible with airport operation. [49 U.S.C. App. 2210 (a) (5)]

The airport owner Dane County, is required as part of any grant application process to furnish a statement of compatible land use. Each grant the airport owner receives references an assurance on compatible land use. Since Dane County does not have land use control outside within the City of Madison, control of project land use impacts will primarily be achieved through a combination of land acquisition, Sales Assistance Program, and Easement Sale Option. These three options are described in Appendix C of the Final EIS and are part of the airport's adopted Noise Compatibility Program (NCP). Additionally, Dane County would encourage surrounding jurisdictions to take appropriate

compatible land use actions. Such collective land use planning is currently being undertaken by the Dane County Corporation Council.

Land acquisition proposed for this project is identified in Appendix D. The primary purpose of this land is for approach protection and the physical development of a small portion of Runway 3/21 and parallel taxiway. The airport owner has agreed that any revenue generating uses of the land acquired in fee simple would be limited to a continuation of the current agricultural operations compatible with aircraft operations.

The airport's NCP, adopted as part of the Part 150 Study, recommends eleven land use management noise abatement measures, which include the three mentioned in the preceding paragraph. The land use measures are described in Appendix A of the Draft and Final EIS, Airport Master Plan and FAR Part 150 Noise Compatibility Study-Executive Summary.

> F.For this project, involving new construction which will affect wetlands and streams, there is no practicable alternative to such construction. The proposed action includes all practicable measures to minimize harm to wetlands and streams which may result from such use. [Executive Order 11990, as amended.]
>
> The wetlands mitigation proposed to be undertaken for the project would involve a need for up to 63 acres of compensatory wetlands at the 1.5:1.0 ratio established in the Cooperative Agreement between WDNR and Wisconsin Department of Transportation. The wetlands mitigation analysis further states that mitigation efforts would focus on the Starkweather Creek/Yahara River system. Other possible mitigation sites may be present in the drained lands north and west of the airport and in the Cherokee Marsh.

The placement or dredged of fill material into waters of the U.S., including wetlands, requires a Clean Water Act Section 404 permit from the U.S. Army Corp of Engineers (USCE). A Memorandum of Agreement between the U.S. EPA and the USCE concerning the determination of mitigation under the Clean Water Act Section 404(b)(1) guidelines explains the sequencing process required for determining the necessary level of mitigation following wetland impacts. Appendix G of the Final EIS, contains Dane County's Section 404(b)(1) evaluation and compensatory wetlands mitigation analysis.

Implementation of Runway 3-21 would require increasing the number of culverts currently installed within Starkweather Creek. Representatives of the USCE, WDNR and WisDOT/Bureau of Aeronautics evaluated the existing creek conditions at MSN and the environmental impacts proposed with construction and operation of Runway 3-21. The parties are in agreement that increasing the culverts within Starkweather Creek is the practicable measure to reduce potential impacts. The airport owner is committed to providing all necessary mitigation as required by the 404 permit.

G.For Any project, involving new construction which will affect floodplains, there is no practicable alternative to such construction. The proposed action includes all practicable measures to minimize harm to floodplains which may result from such use [Executive Order 11998, as amended].

Direct impacts to about 21 acres of the existing 100-year floodplain would include the loss of floodplain storage in this area due to fill that would be required to elevate the runway and taxiway. Decreasing the floodplain storage would also increase the local base flood elevations or force the flood waters into the surrounding wetland areas. The airport owner is committed to onsite and detention facilities as necessary to offset the cumulative impacts.

H.The Federal Aviation Administration has given this proposal the independent and objective evaluation required by the Council on Environmental Quality [40 CFR 1506.6]

The decision to prepare an EIS for the proposed project was made by the FAA. From the outset, the FAA took the lead in the scoping process, including issuance of the Notice of Intent, inviting the participation of other agencies, determining the issues to be analyzed in depth with associated involvement by state/local authorities, and outlining the federal actions, the alternatives and the impacts needing detailed study, as well as those that did not.

For this project, as for any significant airport improvement project, substantial assistance and data analysis were provided by the airport owner and FAA's consultant. FAA's lead consultant on the EIS was Espey, Huston Associates, Inc. The WisDOT/Bureau of Aeronautics acted with FAA as joint lead agency preparing the EIS. Although FAA is dependent on the airport owner and others for certain information and data concerning the details of the proposed project, that data is independently evaluated by the FAA. In the final analysis, the FAA is responsible for all of the judgments, analyses and decision contained in the EIS. Section 9 of the EIS lists the names and affiliations of those individuals who prepared or contributed to the writing, review and completion of the EIS.

Accordingly, it is found that the independent and objective evaluation called for by the Council on Environmental Quality has been provided.

I.For this project, which will involve the displacement and relocation of limited number of persons, fair and reasonable relocation payments and assistance will be provided pursuant to the provisions in Title II of the Uniform Relocation Assistance and Real Property Acquisitions Policies Act of 1970, as amended. Comparable decent, safe, and sanitary dwellings are available for occupancy on the open market or will be built if necessary prior to actual displacement [142 U.S.C. App. 46011].

Although acquisition of residences or businesses for the physical construction of Runway 3/21 is not needed, acquisition of land for the approach area of Runway 3/21 will require

the acquisition of three single family residences and one commercial property. Five warehouse-type structures are on the commercial property. There are six employees operating businesses in the structures, with approximately fourteen employees.

Both the residents and businesses will be provided fair and reasonable relocation payments and assistance pursuant to the provisions in Title II of the Uniform Relocation Assistance and Real Property Acquisitions Policies Act of 1970, as amended. For the residents comparable decent, safe and sanitary dwellings are available for occupancy on the open market or will be built if necessary prior to actual displacement.

> J.For any project, involving new construction which may affect the existence of an endangered species, there is no practicable alternative to such construction. The proposed action includes all practicable measures to minimize harm which may result from such use. [Endangered Species Act of 1974].

The U.S. Fish and Wildlife Service has determined that due to the nature and location of the proposed activities, there will be no federally threatened species or endangered species effected.

The Wisconsin DNR have identified five protected plant species and one species of butterfly potentially occurring in the area. Prior to construction, a field survey will be undertaken to detect the presence of any plant species of concern to WDNR. If any such species are found, appropriate mitigation measures will be implemented.

IX. DECISIONS AND ORDERS

The FAA's goals and objectives have been carefully considered in relation to the various aspects of the proposed project discussed in the FEIS, including the purpose and need to be served by the project, the alternative means of accomplishing the purpose and need, the environmental impacts of the alternatives, the mitigation necessary to preserve and enhance the environment, and the costs and benefits of achieving the purpose and need in terms of effective and fiscally responsible expenditure of funds. The actions involve the planning and development of Dane County Regional Airport and the mitigation of noise impacts associated with the physical aspects of the airport in its relationship with the surrounding community.

The preferred alternative has been determined to be the environmentally preferable alternative examined in the FEIS approved on March 22, 1996. Based on its analysis of the alternatives, the FAA does not believe that there is an alternative substantially preferable from an environmental perspective nor preferable from a comprehensive perspective to that proposed by the airport sponsor. The proposed alternative achieves the EIS purpose and need through airport development that provides aircraft noise abatement and relief from aircraft noise impacts at those areas south and southwest of the airport. Additionally the project provides for airfield operational flexibility.

For these reasons, it is determined that the airport owner's proposal is the environmentally preferred alternative.

Under the authority delegated to me by the Administrator of the FAA, I find that the project is supported and have affixed my signature to the cover of this document approving the proposed development. I, therefore, now direct that action be taken to implement the agency actions outlined in Section III of this Record of Decision:

A. Unconditional approval of an Airport Layout Plan, submitted by Dane County and the WisDOT/Bureau of Aeronautics, depicting the proposed project and associated actions**;** including airspace evaluation of the proposed development, location of the placement of navigation aids, utility or drainage development, modifications to roadway systems or other actions to meet state/local requirements.

B. The consideration of federal funding support under the Airport and Airway Improvement Act of 1982, as amended.

C. Development of air traffic control and airspace management procedures designed to effect the safe and efficient movement of air traffic to and from the proposed airfield development.

D. Where appropriate, the installation, relocation and operation of navigation aids associated with construction and operation of the proposed runway, as described in the FEIS.

These decisions are taken pursuant to 49 U.S.C. 40101 et. seq. and 40 U.S.C. App. 2201 et. seq., and constitute an order of the Administrator which are subject to review by the courts of appeals of the United States in accordance with the Provisions of Section 1006 of the Federal Aviation Act of 1958, as amended, 49 U.S.C. 46110.

APPENDIX A

Tower Order 8400.9A ***(not available with this ROD; contact the Great Lakes Region)***

APPENDIX B

Revised Noise Analysis

This appendix has been prepared in response to comments received on the FEIS requesting validation of the AEM sensitivity analysis and additional disclosure of the impacts of the year 2000 Stage III fleet transition.

A land use analysis on blueline serial photography was conducted to provide a comparison between the number and type of sensitive land uses within the noise contours of the 1997 Revised and 1997 EIS noise exposure contours. Table 1 presents the numbers of sensitive noise receptors and estimated population impacts by each of the contour sets.

The purpose of this memorandum is to provide a narrative description of how the land uses and associated population estimates vary within the different noise contours for the two contour sets.

Variations in the housing counts and population estimates between the 1997 Revised and 1997 EIS contours are caused by two factors. The primary factor is the different aircraft mix for each scenario and the resulting changes in the size and shape of the noise contours. The 1997 EIS has a fleet mix of 80% Stage 2 aircraft and 20% Stage 3; the 1997 Revised fleet mix includes 63% Stage 2 aircraft and 37% Stage 3.

The second factor is the land use type in areas excluded or incorporated within the 1997 Revised noise contours. The impact of the contours is particularly obvious when the land use consists of dense single- family and multi-family housing. The area directly south of the airport is densely populated and is characterized by a high density of single-family dwellings and (within proximity to the airport), numerous duplexes, four-plexes, and multi-family structures with eight units per structure. Any contour that incorporates or excludes these areas, particularly the multi-family areas, will have a greater effect on the housing unit/population estimates than any contour that does not involve these areas.

To facilitate the land use interpretation and the housing unit count, a base map of the airport area was produced from a mosaic of aerial photographs. The noise exposure contours were traced on a separate copy of the base map for each of the two alternatives (1997 EIS and 1997 Revised). Each base map was divided into east and west sections by drawing a line across the entire map along the center of the north/south runway (Runway 18-36). The east.west sections were further divided into quadrants by drawing a line across the entire base map along the mid-section of the map at a ninety-degree angle to the north/south line. The four quadrants were named according to the quadrant's cardinal direction (NE, NW, SE and SW). The following description provides a narrative of changes as they occurred within each quadrant and axis.

1997 Revised Alternatives Compared to 1997 EIS Alternatives

A.1997 Revised No Action Alternative

For the 1997 Revised No Action Alternative, the DNL 70-75 dB noise contour shrank (relative to the 1997 EIS No Action Alternative) approximately 1,200 feet (ft) along the southern axis, relieving dense residential areas (including 31 multi-family units and over 100 single-family units). The contour area also shrank approximately 400 ft along the northern axis, relieving primarily agricultural lands. Along the east and west axis there was little change.

Within the DNL 65-70 dB noise contour for the 1997 Revised No Action Alternative, the contour area shrank approximately 2,000 ft along the southern axis relieving dense single-family residential areas (consisting primarily of single-family units); at the

southern end of the axis the contour area also shrank approximately 800 ft to the east and west, relieving dense residential areas. Although the contour area shrank along the southern axis relieving numerous residential units, additional multi-family units were gained in the northern portion of the southern area immediately adjacent to the airport (an area that under the 1997 EIS No Action Alternative was located within the DNL 70-75 dB area). This gain in multi-family housing offsets the number of units that were relieved by the shrinkage in the DNL 65-70 dB contour and explains the increase in total units (compared to the EIS total count for the DNL 65-70 dB contour) located within the 1997 Revised DNL 65-70 contour. The northern portion of the contour contain minor shrinkage from the previous EIS contour area.

B.1997 Revised 3-21 Alternative

For 1997 Revised 3-21 Alternative, the DNL 70-75 dB noise contour (relative to the EIS 3-21 Alternative) shrank approximately 1,100 feet (ft) along the southern axis, relieving dense residential areas including 23 multi-family units and numerous single-family residences. The contour shrank approximately 600 ft along the northern axis, relieving primarily agricultural lands and a few single-family units. Along the east and west axis there was little change.

Within the DNL 65-70 dB noise contour for the 1997 Revised 3-21 Alternative, the contour shrank approximately 1,400 feet (ft) along the southern axis and approximately 1,000 ft to the east and west, relieving dense residential areas (consisting primarily of single-family units and 18 multi-family units) and numerous commercial and other sensitive land uses. Along the northern axis the contour area stayed essentially the same, although a slight reduction in area occurred in the northeast quadrant, relieving a few single-family units and agricultural land.

C.Sensitive Land Uses

Preparing this land use comparison of impacts of the 1997 EIS and 1997 Revised noise exposure involved a more detailed evaluation of the aerial photography. The detailed analysis necessitated revisions to the numbers of sensitive land uses impacted by the contours. Table 1 presents the number of sensitive land uses impacted by each of the contour sets. The revision of the structure counts does not change the overall weight of the alternative's impact on sensitive land uses. Variations in the remaining counts reflect changes in the configuration as well as shrinkage of the overall noise contours.

APPENDIX C

Comments Received and Responses on the Final Environmental Impact Statement

A Notice of Availability of the FEIS for the proposed ALP approval including construction of Runway 3-21 at Dane County Regional Airport was published in the Federal Register on May 3, 1996. The FEIS was sent to Federal, State, and local agencies as well as to interested groups and individuals. The comment period was open through

June 3, 1996. Several comments were received within the comment period and one was received after this date. All comments were responded to.

Appendix C contains individual responses to comments, a listing of exhibits used in responding to comments, and individual letters provided by commentors.

Responses to Comments on the FEISPage

- City of Madison - Department of Public WorksC-1
- American Family Mutual Insurance CompanyC-5
- Dane County Regional Planning CommissionC-5
- Wisconsin Department of TransportationC-7
- Michael D. BarrettC-9
- Bicycle Transportation Alliance of Dane CountyC-11
- U.S. Environmental Protection AgencyC-13
- Wisconsin Department of Natural ResourcesC-27
- Madison Audubon SocietyC-28

Exhibits Used to Respond to Comments

Response letter from Dane County Regional AirportC-35

ALP and NCP Property Acquisition Plan MapC-37

Comment Letters

- City of Madison - Department of Public Works
- American Family Mutual Insurance Company
- Dane County Regional Planning Commission
- Wisconsin Department of Transportation
- Michael D. Barrett
- Bicycle Transportation Alliance of Dane County
- U.S. Environmental Protection Agency
- Wisconsin Department of Natural Resources
- Madison Audubon Society

APPENDIX D

ALP and NCP Property Acquisition Plan ***(not available on the internet; contact the Great Lakes Region)***