

**FINAL FEDERAL ENVIRONMENTAL ASSESSMENT (EA) /
STATE OF MINNESOTA ENVIRONMENTAL ASSESSMENT WORKSHEET (EAW)
FOR
AIRFIELD AND ASSOCIATED IMPROVEMENTS
at Crystal Airport in Crystal, Brooklyn Park, & Brooklyn Center, Minnesota**


Prepared by Mead & Hunt, Inc.
under contract with the Metropolitan Airports Commission

July 2019

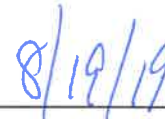
RGU CERTIFICATION

I hereby certify that:

- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined by Minnesota Rules, parts 4410.0200, subparts 9c and 60, respectively.
- Copies of this EA/EAW are being sent to the entire EQB distribution list.



Bridget M. Rief
Vice President, Planning and Development
Metropolitan Airports Commission



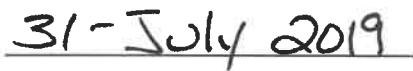
Date

FAA CERTIFICATION:

This becomes a Federal document when evaluated, signed, and dated by the Responsible FAA Official.



Joshua Fitzpatrick
Environmental Protection Specialist
Federal Aviation Administration



Date

CRYSTAL AIRPORT
FINAL FEDERAL ENVIRONMENTAL ASSESSMENT (EA) /
STATE OF MINNESOTA ENVIRONMENTAL ASSESSMENT WORKSHEET (EAW)

Change Sheet

This change sheet summarizes revisions made to the EA/EAW following the close of the Draft EA/EAW public comment period on June 10, 2019. Additional revisions made in response to comments from the public, municipalities, and agencies are described in the comment response matrices found in **Appendix M** to the Final EA/EAW. None of these revisions affect the analysis or findings in the Draft EA/EAW.

This change sheet does not include other minor changes made to the EA/EAW following the close of the Draft EA/EAW public comment period, such as spelling out acronyms, changing the first letter of certain nouns to upper case or lower case, inserting words that were inadvertently omitted, correcting misspellings or grammatical errors, replacing words or terms with more specific and/or appropriate words or terms, deleting unnecessary words or terms, or correcting errors in references.

Section 3.2.3, 2035 LTCP Alternatives

- Taxiway System Alternative A1 has been updated to include addition of a new run-up pad west of the Runway 32 threshold and expansion of the existing run-up pad west of the Runway 14 threshold.

Section 3.3, Preferred Alternative / Proposed Action

- The proposed action has been updated to include addition of a new run-up pad west of the Runway 32 threshold and expansion of the existing run-up pad west of the Runway 14 threshold.

Section 4.3.1, Listed Species

- The reference to FAA's Endangered Species Act Section 7 determination for the northern long-eared bat has been revised to read "may affect, not likely to adversely affect" to accurately reflect the language of the determination correspondence included in Appendix B.

Section 4.4.3, Environmental Consequences (Climate)

- Annual statewide CO₂e emissions have been updated to reflect the latest biennial greenhouse gas emissions report submitted to the state legislature by the Minnesota Pollution Control Agency in January 2019.

Section 4.6.3, Environmental Consequences (Department of Transportation Act, Section 4(f))

- A sentence has been added to this section stating that the FAA issued a Final Section 4(f) *de minimis* finding for the proposed action following the Draft EA/EAW public comment period.
- A sentence has been added to this section stating that the City of Brooklyn Park concurred in writing, following the public comment period, that the proposed action will not adversely affect the activities, features, or attributes that make Edgewood Park eligible for Section 4(f) protection.

Section 4.10.2, Affected Environment (Land Use)

- The last sentence under Public Facilities, Transportation, has been revised to note that local bus service is provided along Bass Lake Road at the Airport's southern boundary.

Section 4.12.3, Environmental Consequences (Noise and Compatible Land Use)

- The second to last paragraph of this section has been corrected to state that the MAC will test four residences located in the 65 DNL contours around Crystal Airport, not five residences.

Section 4.13.2, Affected Environment (Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety)

- A new paragraph has been added below Table 4-12 to include discussion of economic activity and employment at worksites near the Airport.

Section 4.13.3, Environmental Consequences (Environmental Justice)

- Several new paragraphs have been added to acknowledge and explain that tree removal analyzed in Sections 4.3.2 and 4.6.3 will occur within census block groups that are home to minority populations, but that the proposed tree removal will not have a disproportionately high and adverse impact to environmental justice populations.

Section 4.15.1, Surface Waters and Stormwater

- The impervious surface calculations under environmental consequences have been updated to include addition of a new run-up pad west of the Runway 32 threshold and expansion of the existing run-up pad west of the Runway 14 threshold.

Section 4.15.4, Wetlands

- A sentence has been added to state that, on May 21, 2019, the Shingle Creek Watershed Management Commission issued a WCA Notice of Decision approving the wetland boundaries and types indicated in the Mead & Hunt wetland delineation report contained in Appendix J.

Section 4.16.2, Past, Present, and Reasonably Foreseeable Projects

- The last sentence of the first paragraph under "Foreseeable" and "Reasonably Likely to Occur" Future Off-Airport Projects has been revised to clarify that Blue Line Light Rail Transit (LRT) service is project to begin in the year 2023 or later.

Section 4.17, Summary

- Table 4-15 has been revised to reflect revisions to Sections 4.6.3 and 4.15.1 above.

Chapter 5, State Environmental Assessment Worksheet (EAW) Content

- The project description in Section 6 has been revised to match the proposed action description in Chapter 3, Section 3.3.

METROPOLITAN AIRPORTS COMMISSION

In re Crystal Airport Airfield and Associated
Improvements Final Environmental
Assessment/Environmental Assessment Worksheet,
Adequacy Determination, and Negative Declaration
on the Need for an Environmental Impact Statement

FINDINGS OF FACT, CONCLUSIONS, AND ORDER

The above-titled matter came before the Metropolitan Airports Commission (MAC), the responsible governmental unit (RGU) for the proposed Crystal Airport Airfield and Associated Improvements (the “proposed project” or the “project”), upon completion of a joint Environmental Assessment/Environmental Assessment Worksheet (EA/EAW) for the proposed project. Crystal Airport (the “Airport”) is also known by its three-letter International Air Transport Association airport code as MIC. Based on the MAC’s files and records related to this matter, the MAC finds, concludes, and orders as follows:

FINDINGS OF FACT

I. INTRODUCTION

1. The proposed project requires preparation of environmental review documents under the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321-4370h, and the Minnesota Environmental Policy Act (MEPA), Minn. Stat. ch. 116D, because the proposed project will require approvals by the Federal Aviation Administration (FAA) and by the MAC. A Finding of No Significant Impact/Record of Decision (FONSI/ROD) determining that the EA/EAW for the proposed project is adequate under NEPA and there are no significant impacts associated with the proposed project was issued by the FAA on July 31, 2019.

2. Under MEPA and the rules implementing the statute promulgated by the Minnesota Environmental Quality Board and codified at Minn. R. ch. 4410, the MAC is

the RGU for the proposed project. The MAC prepared an EAW for the proposed project because it determined the project may have the potential for significant environmental effects under MEPA. MEPA, Minn. Stat. § 116D.04, subd. 2a(b); Minn. R. 4410.1000, subp. 3.

3. MEPA provides a federal Environmental Assessment (EA) document may be circulated in place of an EAW form if the EA addresses each of the environmental effects identified in the EAW form. Minn. R. 4410.1300. The EA/EAW for the proposed project addresses each of the environmental effects identified in the EAW form, and the MAC circulated the EA/EAW in place of an EAW form.

4. The MAC must determine whether the EA/EAW document is “adequate”—that is, whether it satisfies MEPA’s legal requirements for presenting the information necessary to make a reasoned decision about the potential for or significance of the proposed project’s environmental impacts. In addition, the MAC must determine whether the proposed project has the “potential for significant environmental effects” and requires preparation of an environmental impact statement (EIS) under MEPA. MEPA, Minn. Stat. § 116D.04, subd. 2a(b); Minn. R. 4410.1700. The MEPA criteria for determining the need for an EIS require a consideration of the type, extent, and reversibility of the project’s environmental effects; the cumulative potential effects of related or anticipated future projects; the extent to which the environmental effects are subject to mitigation; and the extent to which the environmental effects may be anticipated or controlled as a result of other available environmental studies. Minn. R. 4410.1700, subp. 7.

5. The MAC’s decision must be in the form of either a negative declaration or a positive declaration. The MAC must base its decision regarding the need for an EIS on

the information gathered during the EAW process and on the comments received on the EAW. Minn. R. 4410.1799, subp. 3.

II. PROJECT BACKGROUND

6. Current facilities at MIC include three paved runways and one turf runway. The main primary runway, 14L/32R, is 3,267 feet long and has paved blast pads on each runway end that are not considered useable pavement when calculating aircraft takeoff or landing distance requirements. The parallel primary runway, Runway 14R/32L, is 3,266 feet long. Both primary runways are 75 feet wide. The paved crosswind runway, 06L/24R, is 2,500 feet long and 75 feet wide. Runway 06R/24L, the turf crosswind, is 2,123 feet long and approximately 137 feet wide. In addition to the runways, the Airport has a taxiway system providing access between the airfield and building areas on the north, south, east, and west sides of the Airport.

7. The existing airfield configuration is complex and may contribute to pilot confusion and runway incursions. Additional runway length and enhanced instrument approach capabilities are necessary to meet required runway length for critical design aircraft¹ and help to mitigate penetrations for both ends of the main primary runway. Furthermore, existing ground vehicle circulation and aircraft parking is inadequate.

8. The MAC recently completed a Long-Term Comprehensive Plan (LTCP) for the Airport, which the MAC Board approved in October 2017. The LTCP concluded Runway 14R/32L should be decommissioned to better match the current and projected

¹ FAA Advisory Circular 150/5300-13A, *Airport Design*, defines the term “design aircraft” as “an aircraft with characteristics that determine the application of airport design standards for a specific runway, taxiway, taxilane, apron, or other facility. This aircraft can be a specific aircraft model or a composite of several aircraft using, expected, or intended to use the airport or part of the airport.”

activity at the Airport, and that Runway 14L/32R should be extended to a length of 3,750 feet by converting portions of existing blast pads to useable runway. The LTCP also identified undeveloped Airport land suitable for non-aeronautical use and identified the need for a GPS-based non-precision instrument approach procedure for Runway 32.

9. The purpose of the proposed project at the Airport is to address airfield safety concerns through implementation of three goals: (a) aligning the airfield infrastructure to meet existing and forecasted operations; (b) preserving and improving operational capabilities for critical design aircraft; and (c) enhancing safety by simplifying the runway and taxiway layout.

10. Major components of the proposed project include: (a) decommissioning Runway 14R/32L and converting it to a parallel taxiway; (b) converting portions of Runway 14L/32R blast pads to usable runway; (c) reducing the length of Runway 06R/24L (turf) to clear Taxiways D and F from the runway safety area; (d) establishing a straight-in Global Positioning System (GPS) instrument approach to Runway 32R; (e) removing various taxiways and constructing new taxiways and runup pads; (f) constructing perimeter road segments around three runway ends; (g) expanding the fixed base operator (FBO) aircraft parking apron; and (h) developing airport land for non-aeronautical use along 63rd Avenue North.

11. Under the proposed project, the MAC will enhance safety by simplifying the airfield geometry, providing required runway length for critical design aircraft, enhancing instrument approach capabilities, improving Airport ground vehicle circulation and apron parking capacity, diversifying Airport revenue opportunities and reducing incompatible land uses within the Runway Protection Zones (RPZs).

III. EAW PROCESS

12. The FAA and the MAC coordinated with interested agencies and the public throughout preparing the EA/EAW for the proposed project. Coordination began in January 2018 with the MAC briefing the FAA and the community regarding the proposed project, followed by presentations and briefings at the MAC Planning, Development and Environment Committee throughout 2018 and 2019. Additionally, an Airport Community Panel was assembled and met on two occasions to ensure involvement from key stakeholders. The MAC also held one public meeting on October 30, 2018, before completing the draft EA/EAW.

13. The FAA and the MAC released the draft EA/EAW for public comment on April 22, 2019. The MAC held one public hearing on the draft EA/EAW on May 29, 2019, at the Crystal City Hall during which the MAC received public comments. The public comment period on the draft EA/EAW closed on June 10, 2019.

14. In developing the final EA/EAW, the MAC considered the oral and written public and agency comments received during the public comment period on the draft EA/EAW. The MAC, in coordination with the FAA, also responded to all oral and written comments received on the draft EA/EAW during the public comment period. *See Final EA/EAW, Appendix M, Draft EA/EAW Comments and Responses.*

IV. THE PROPOSED PROJECT AND PREPARATION OF THE EA/EAW

15. The MAC has determined the proposed project is not exempt from environmental review and “may have the potential for significant environmental effects.” MEPA, Minn. Stat. § 116D.04, subd. 2a(b); Minn. R. 4410.1000, subp. 3. Therefore, the MAC prepared the EA/EAW for the project.

16. The EA/EAW addresses the impact categories discussed in the EAW form under MEPA, and all the FAA impact categories. Therefore, the MAC circulated the EA/EAW document in place of the EAW form. Minn. R. 4410.1300.

V. CRITERIA FOR DETERMINING WHETHER THE PROPOSED PROJECT HAS THE POTENTIAL FOR SIGNIFICANT ENVIRONMENTAL EFFECTS AND REQUIRES AN EIS UNDER MEPA

17. MEPA requires that the MAC prepare an EIS for the proposed project if the project has the potential for significant environmental effects. Minn. Stat. § 116D.04, subd. 2a(b); Minn. R. 4410.1000, subp. 3. The Minnesota Environmental Quality Board rules establish four criteria that a responsible governmental unit must use in considering whether a project has the potential for significant environmental effects. Those factors are:

- A. type, extent, and reversibility of environmental effects;
- B. cumulative potential effects of related or anticipated future projects;
- C. the extent to which the environmental effects are subject to mitigation by ongoing public regulatory authority; and
- D. the extent to which environmental effects can be anticipated and controlled as a result of other available environmental studies undertaken by public agencies or the project proposer, including other EISs.

Minn. R. 4410.1700, subp. 7.

A. The Type, Extent, and Reversibility of the Proposed Project's Environmental Effects

(i) Air Quality

18. The FAA and the MAC conducted an air quality assessment in the EA/EAW that complies with United States Environmental Protection Agency (EPA) and FAA guidance. The EA/EAW includes an aviation operational emissions inventory developed

using the FAA Aviation Environmental Design Tool (AEDT) model under the same scenarios that the EA/EAW analyzed for aircraft noise. In addition, the EA/EAW includes a construction emissions inventory using the Airport Construction Emissions Inventory Tool (ACEIT), which uses general assumptions for runway and taxiway construction based on the MAC's latest capital improvement plan for the Airport.

19. As of March 2019, Hennepin County, including the area surrounding Airport, is in a "maintenance area" for National Ambient Air Quality Standards (NAAQS) for sulfur dioxide and carbon monoxide but now attains NAAQS for those pollutants. Hennepin County is in attainment for all other criteria pollutants. The EA/EAW calculates air emissions for the 2017 baseline (existing conditions) and 2025 forecast (proposed project and no-action alternative) scenarios for the Airport. The AEDT model estimates an overall increase in pollutant emissions from the Airport between the 2017 baseline estimate and 2025 forecast scenarios, which results from the forecasted increase in aircraft operations anticipated by both the 2025 no-action and proposed project scenarios. Although there are slight emissions increases from the Airport in 2025 under both the no-action and proposed action scenarios, changes are below the *de minimis* thresholds for maintenance areas identified by the FAA Aviation Emissions and Air Quality Handbook Version 3, Update 1 (January 2015).

(ii) Greenhouse Gas Emissions and Climate Change

20. The EA/EAW considers greenhouse gas (GHG) emissions by evaluating the potential incremental change in carbon dioxide equivalent (CO_{2e}) emissions for the Airport resulting from the proposed action as compared with the no-action alternative. Carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O) are the primary contributors to

CO_{2e}. The EA/EAW found the proposed project will cause temporary increases in direct on-site CO_{2e} emissions from the Airport attributable to construction equipment. Total construction CO_{2e} emissions are estimated at approximately 2,483 tons over a two-year period. On-site operational CO_{2e} emissions attributable to aircraft operations in 2025 under the proposed project are expected to increase by approximately 59 tons, from approximately 699 tons per year in 2017 to approximately 758 tons per year in 2025. Aircraft operations are expected to slightly increase emissions in the years after 2025 compared to the no-action alternative.

21. The EA/EAW referenced the Minnesota Pollution Control Agency (MPCA) biennial GHG report to the state legislature dated January 2019. That report estimated statewide CO_{2e} emissions in 2014 at 165.6 million tons, while the United States Environmental Protection Agency (EPA) estimated nationwide CO_{2e} emissions in 2014 at 6,870 million tons. Based on these estimates of CO_{2e} emissions, the potential for the proposed project to affect future climate conditions is limited.

22. There are no analytical or modeling tools available that reliably evaluate the incremental effect of a proposed action's discrete GHG emissions on the global and regional climate. In addition, there are no analytical or modeling tools available that reliably evaluate any cascading effects, or cumulative effects, from a proposed action's GHG emissions on natural ecosystems and human economic systems in each state or region. Future negative impacts on climate conditions are unlikely to affect the Airport in the foreseeable future. The consequences of warming temperatures in Minnesota include increased rainfall and increased chance of flooding. However, all Airport infrastructure is

located outside of 100-year floodplains, and there are no major bodies of water close to Airport facilities.

(iii) Construction Impacts

23. The EA/EAW uses the Airport Construction Emissions Inventory Tool (ACEIT) to model air emissions from construction activities at the Airport associated with the proposed project. Total emissions associated with all years of construction are not expected to exceed the *de minimis* thresholds for those pollutants with *de minimis* thresholds in the FAA's Aviation Emissions and Air Quality Handbook Version 3, Update 1 (January 2015). Increased emissions associated with the proposed project's construction will be mitigated through voluntary best management practices (BMPs), such as engine idling restrictions and maintenance requirements, and other control strategies identified in the *United States Environmental Protection Agency Diesel Emission Restriction Checklist*.

24. Construction may cause temporary impacts to water quality. The MAC will employ BMPs to protect against these temporary impacts, including implementation of stormwater management, erosion, and sediment control practices such as installation of silt fences, temporary sediment basins, inlet protection, and erosion control blankets. An erosion and sediment control plan will specify temporary and permanent erosion control measures in compliance with local, state, and federal regulations.

25. The MAC will design construction activities in a manner that minimizes overall soil disturbance. Sediment control measures will be installed on all down gradient land disturbing activities before beginning construction. Construction practices will take necessary precautions to address stormwater runoff of fuels, oils, bitumen, chemicals, and other harmful materials, and to reduce air pollution from particulate and gaseous matter. A

variety of erosion prevention and sediment control practices may be necessary to stabilize slopes and drainage ways, protect inlets to the stormwater conveyance system, limit gully formation, and capture sediment. Several practices can be used as temporary erosion control and sediment control, and to meet municipal separate storm sewer system (MS4) requirements. Temporary sediment control practices may include use of vegetated buffers, silt fences, inlet protection, temporary sediment basins, fiber logs, or erosion control blankets, as appropriate.

26. Construction equipment noise will be temporary. The MAC will mitigate construction noise by implementing construction practices specified in FAA Advisory Circular (AC) 150/5370-10E, *Standards for Specifying Construction of Airports*. The MAC will also include contract provisions requiring construction noise mitigation.

27. The MAC will minimize the introduction and spread of invasive species at the Airport prior to, during, and after construction of the proposed project through many BMPs. Prior to construction, standard cleaning procedures of equipment used on-site will minimize the introduction of exotic invasive species from outside the Airport. Storage and cleaning of equipment and materials in established staging areas during construction will also minimize the spread of invasive plant seeds to off-site areas or other areas on-site. Areas disturbed during construction will be seeded with many turf grasses.

(iv) Aircraft Noise and Compatible Land Use

28. The proposed project reduces aircraft noise impacts. The EA/EAW employed FAA's Aviation Environmental Design Tool (AEDT) software to model aircraft noise and create noise contours based upon the 2017 baseline and 2025 forecast aircraft operations for the Airport under the no action alternative and the proposed project.

29. The FAA, the EPA, and the United States Department of Housing and Urban Development (HUD) established the 65 DNL as the threshold indicating significant cumulative noise impacts. The FAA considers noise impacts to be significant if “the action would increase noise by DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe.” Currently, the 65 DNL 2017 baseline contour is mostly contained on Airport property, except for a small area south of the Airport off the Runway 32L end. Eleven residential parcels are in or partially within the 65 DNL contour in the current condition. The 70 and 75 DNL contours are contained on the Airport property.

30. Under the 2025 no action alternative, the 65 DNL contour is still mostly contained on Airport property, except for twelve residential parcels on the south side of the airport. The 70 and 75 DNL contours for the no action alternative remain contained on the Airport property. The 2025 proposed project scenario shows a reduction of residential parcels in the 65 DNL contour from twelve to four because of closing Runway 14R/32L. The 65 DNL and greater contours for 2025 under the proposed project are otherwise all contained on Airport property. Furthermore, under the proposed project there are no areas within the 65 DNL contour that will experience an increase of 1.5 dB DNL or more. Therefore, there will be no significant noise impacts under the proposed project.

(v) Socioeconomic Impacts

31. The proposed project is not expected to influence economic activity in the area or cause any relocation or disruption of the established community. Proposed non-

aeronautical development on the north side of the Airport will increase the City of Brooklyn Park tax base, resulting in some new economic activity and generating some traffic in the area. However, these impacts are insignificant within the context of the activity already occurring in this fully developed urban area.

**(vi) Environmental Justice and Children's Environmental
Health and Safety**

32. No significant off-Airport impacts associated with the proposed project affect environmental justice populations. Brooklyn Park and Brooklyn Center are home to minority populations that, in aggregate, make up more than 50 percent of city residents. Crystal has fewer minority residents, but the percentage of the minority population in the city is higher than in the Twin Cities metro area.

33. The concentration of low-income residents near the Airport is not as high as the nearby concentrations of minority populations. A large low-income population lives in Brooklyn Park one-half mile north of the Airport, but this area is separated from the Airport by Interstate Highway 94/694 and is not directly within the runway approach or departure paths. Most census block groups directly adjacent to the Airport have 17 percent or fewer residents falling into a low-income category. One block group on the east side of the Airport is home to 34 percent low-income residents, but this area is largely separated from the Airport by the Crystal MAC Conservation Area and Upper Twin Lake.

34. Expected socioeconomic conditions under both the no-action and proposed project are comparable to existing conditions. Resource categories do not have off-Airport impacts in most cases. Off-Airport residential parcels affected by noise are not located in areas with high proportions of minority or low-income populations. Up to 49 trees located

on private properties and public rights-of-way, and up to 32 trees within a city park, will need to be trimmed or removed for the proposed action. The 32 trees within a city park are in the Runway 14 approach and within a census block group with 76 percent minorities. This is considered an environmental justice population because it exceeds the 50 percent minority threshold established by CEQ guidance. Because removal of these trees will not substantially change the wooded character of the park and the MAC will replace them with other shorter and more suitable species for the park environment, tree removal in the park will not have a disproportionately high and adverse impact to environmental justice populations. Of the 49 trees located on private properties and public rights-of-way, twenty-three are in the Runway 14 approach and within a census block group with 76 percent minorities, four are in the Runway 32 approach and within a census block group with 50 percent minorities, four are in the Runway 6L approach and within a census block group with 34 percent minorities, and eighteen are in the Runway 24R approach and within a census block group with 68 percent minorities. Because tree removal on private properties will be carefully targeted individual trees, the MAC will compensate homeowners for tree removal on private properties, and suitable low-growing species will be planted in their place, tree removal on these properties will not have a disproportionately high and adverse impact to environmental justice populations. No significant off-Airport impacts associated with the proposed project affect environmental justice populations.

35. Expected socioeconomic conditions under the no-action and proposed project are comparable to existing conditions, and most resource categories do not have off-Airport impacts. Off-Airport parcels affected by noise do not include schools or playgrounds, or facilities that would otherwise be primarily accessed by children. Under

the proposed project, there are no significant impacts to air quality or water resources that may influence the health of the surrounding population, including children. There are no disproportionate safety risks associated with the proposed project, which will occur entirely on fenced Airport property. Although there is a larger than average proportion of children near the ultimate Runway 14 end, impacts in other resource categories in this area are not significant. No disproportionate health or safety risks to children are expected.

(vii) Biological Resources

36. The proposed project area contains potential habitat at or near the Airport for one endangered species, one threatened species, and one protected species: (a) the rusty-patched bumble bee, a federally-listed endangered species; (b) the northern long-eared bat, a federally-listed threatened species; and (c) the bald eagle, a federal protected species. Bird species protected by the Migratory Bird Treaty Act (MBTA) have also been documented near the Airport. According to the United States Fish and Wildlife Service (USFWS), the Airport is in a low potential habitat zone for the rusty-patched bumble bee. The FAA determined the proposed project will have no effect on the rusty-patched bumble bee because the proposed project is in a developed area with a low potential habitat zone for the bee and does not affect any prairie habitat. The USFWS concurred in the FAA's determination.

37. The proposed project is within a mostly developed area and does not include documented suitable or designated critical habitat; therefore, the proposed project is not likely to adversely impact the northern long-eared bat. To avoid and minimize potential unforeseen impacts on the bat, the MAC will complete tree clearing between October 1 and April 30, which is the dormant season for the bat at the Airport's latitude. Additionally,

the MAC will ensure tree removal is limited to those trees specified on project plans. The FAA determined the proposed project may affect, but is not likely to adversely affect, the bat, and the USFWS concurred in the FAA's determination.

38. The bald eagle and seven bird species protected by the MBTA have been documented by USFWS survey sources within approximately six miles of the Airport over the past ten years. The breeding season for the bald eagle extends from December to August, but eagles typically nest near bodies of water and away from developed areas. The other listed birds nest outside the project area or have not been observed in the project area during nesting season. The eagles and migratory birds are not likely to be affected by the proposed project's ground disturbances, which will be limited to regularly mowed airfield areas. However, off-Airport tree removal has the potential to disturb some wooded wetland habitat, which could impact the eagles and migratory birds during nesting season. Before any construction activity during the nesting season, the MAC will complete an MBTA nesting bird survey. Tree removal will occur outside of nesting months. The USFWS concurred in these conservation measures.

39. An obstruction analysis conducted in 2018 identified several areas where trees currently or are projected to penetrate airspace approach surfaces within five years of project implementation. Although some of these trees will need to be trimmed or removed for the no-action alternative, there is an increase in the number of projected tree obstructions under the proposed project. The proposed project also includes approximately 32 trees to be removed within a city park. Any tree removals will be carefully targeted and will not involve clear-cutting stands of trees. Off-Airport tree removal will not target stands

or large groupings of trees that will significantly disrupt habitats. Identification of specific trees to be removed or trimmed will be determined during the detailed project design phase.

40. Vegetation management practices at the Airport include mowing of all areas within the perimeter fence regularly. Vegetation management after construction of the proposed project will continue as before, with regular mowing to minimize wildlife hazards and the introduction and establishment of invasive species.

(viii) United States Department of Transportation, Section 4f

41. Two sites bordering the Airport and one site under the extended centerline for Runway 14L/32R fit the definition of a Section 4(f) property. A 4(f) property to the west side of the Airport is the Crystal Lakes Regional Trail, which is operated by the Three Rivers Park District and governed by the Metropolitan Council's *2040 Regional Parks Policy Plan*. The eastern portion of the MAC-owned property is used as the Crystal MAC Conservation Area and is also a 4(f) property. The proposed project will not constitute a use of these two 4(f) properties. The settings of the parklands are projected to remain in the same condition regarding land cover, visual environment, and noise levels as they would with the no-action alternative. The proposed project will not impair the usefulness or accessibility of the Crystal Lakes Trail or the Crystal MAC Conservation Area and will not be detrimental to the public interest.

42. Approximately 32 cottonwood trees need to be removed in Edgewood Park, a Section 4(f) property under the extended centerline for Runway 14L/32R. A Section 4(f) Evaluation report was developed as part of the EA/EAW and made available for public review and comment concurrent with the Draft EA/EAW document. The MAC met on several occasions with the City of Brooklyn Park, which has jurisdiction over the Section

4(f) property, to discuss the property's significance, primary use, avoidance alternatives, impacts to the property, and mitigation measures. The FAA issued a Preliminary Finding on February 11, 2019, that the proposed action will not significantly affect Edgewood Park and issued a *de minimis* Section 4(f) action. The City of Brooklyn Park concurred in this finding.

43. Removal of the cottonwood trees will not substantially change the wooded character of the park or the available habitat types, nor will it change the wetland type or substantially alter its tree cover. Tree removal will be carefully targeted, clear-cutting stands of trees will not be required, all available measures will be taken to minimize impacts to other trees, and the MAC will replace trees with other shorter and more suitable species for the park environment. For these reasons, the use of Edgewood Park as a neighborhood park and as a natural resource is not expected to be impaired by the proposed project.

(ix) Hazardous Materials, Solid Waste, and Pollution Prevention

44. The proposed project area has been an airfield since the late 1940s. The MAC used the MPCA "What's in my Neighborhood" search tool to search for sites containing hazardous materials in the proposed project area. Several active and closed sites were identified on and adjacent to the Airport. Most active users or generators of hazardous materials in the area are small generators related to Airport use, automobile-oriented businesses, and medical facilities adjacent to the Airport.

45. The Airport has a Spill Prevention, Control & Countermeasure Plan (SPCC) that applies to its storage tanks. The MAC maintains above-ground storage tanks on the

property containing motor oil, hydraulic fluid, and transmission fluid, as well as a 2,500-gallon underground diesel tank. Above-ground tanks are inspected for leaks monthly, and the underground tank has an electrical leak detection system.

46. Thunderbird Aviation fueling facilities are located next to the proposed apron expansion. Design and construction of the apron expansion will carefully consider its location to avoid any potential disturbance to these facilities. Other tank sites on Airport property will not be disturbed by the proposed project.

47. The proposed project will not generate hazardous waste, but will produce construction debris such as dirt, concrete, and asphalt. Construction materials and other solid waste will be disposed of at a commercial landfill capable of handling disposal as required by Minn. R. 7035.0805. Local disposal facilities are expected to have capacity to accept solid waste volumes that will be produced by construction and operation of the proposed project. Recycling of asphalt and fill material will be considered during project design, as practicable.

48. There are no hazardous materials or solid waste impacts expected for the proposed project, nor will the proposed project interfere with any ongoing remediation of existing contaminated sites in the immediate vicinity of the project area.

(x) Historical, Architectural, Archaeological, and Cultural Resources

49. The MAC's consultant conducted a Phase II Historic and Architectural property inventory at the Airport in 2018. Buildings and Airport facilities were evaluated as potential examples of post-World War II general aviation architecture. Historians did not identify the Airport as having unusual or significant airport design. The evaluation also

found that post 1970s buildings are located throughout the Airport, and many buildings have been altered from their historic appearance.

50. On May 31, 2018, archeologists from the Mississippi Valley Archeology Center (MVAC) performed fieldwork for a Phase I archeological survey for the proposed action at the Airport. MVAC performed a pre-field investigation to identify known archeological sites, reviewing records on file with the Minnesota Office of the State Archeologist. The area of potential effect consists of mowed grass on the existing airfield, and wooded areas in the future non-aeronautical development areas. The Phase I survey was completed with shovel surveys, which yielded no cultural materials other than modern asphalt, nails, glass, and shreds of fabric. No pre-contact cultural materials were discovered as a result of the survey. Much of the project area consists of disturbed and wetland soils, making the presence of surviving cultural materials unlikely.

51. The FAA has determined that a Section 106 finding of No Historic Properties Affected applies for the proposed project and submitted this finding to the Minnesota State Historic Preservation Office (SHPO). In June 2018, the SHPO concurred with the FAA finding. In June 2018, the FAA reaffirmed their finding of No Historic Properties Affected based upon the finding of the Phase I archeological survey. In July 2018, the SHPO concurred with the FAA finding.

(xi) Light Emissions and Visual Effects

52. The proposed project will result in changes to airfield lighting from the relocation and extension of Runway 14L/32R and the associated parallel taxiway. The proposed project will extend existing medium intensity runway edge lighting (MIRL) systems along the edges of the relocated and extended runway pavement. New taxiway

edge lighting will be installed on the parallel taxiway and associated connections to the primary runway. The proposed project will shift the runway end identifier lights (REIL) along with the Runway 14L/32R extension. But the REIL will remain near existing locations. The visual approach slope indicator (VASI) on Runway 32R end will be replaced with a precision approach path indicator (PAPI).

53. The new Runway 14L end will be approximately 300 feet closer to the neighboring community, and most residences have little visual screening. When the tower is closed, the MIRL, PAPI/VASI, and REIL can be remotely activated, so these systems need only be in full effect when aircraft are approaching and departing during low visibility conditions or at night. Methods for visual screening will be considered during project design for the residential properties near the new runway end points.

54. New airport lighting systems will be similar in type and location to the existing airport lighting systems. The new lighting systems will only be in full effect when in use by approaching and departing aircraft and during low visibility conditions or at night. Based on the information above, there are no significant visual effects associated with the proposed project.

(xii) Natural Resources and Energy Supply

55. The proposed project will include the addition of approximately 75 runway and taxiway lights. If light units to be added are incandescent, the annual electricity requirements of airfield lighting systems are expected to increase approximately 35 percent. If LED fixtures are installed, the annual electricity needs are expected to decrease

approximately 70 percent. This difference in electricity consumption will inform consideration of specific light systems at the time of project design.

56. Consumption of energy and natural resources during the construction phase of the proposed project will consist mainly of construction machinery fuel and construction materials. This consumption will not exceed locally available supplies, and efforts will be made during design to identify opportunities for recycling pavements and underlying base material.

57. Operation and maintenance of the proposed project is expected to require minor increases in energy demand. No significant increase in aircraft or ground vehicle fuel usage is expected under the proposed project. In addition, the minor increase in utility demand for airfield lighting and maintenance equipment under the proposed project is not expected to have a negative impact on local energy or natural resource supplies.

(xiii) Water Resources

58. The proposed project will add approximately 292,300 square feet (6.7 acres) of impervious surface associated with the runway, taxiways, run-up pads, perimeter roads, and aircraft parking apron. However, approximately 232,550 square feet (5.3 acres) of existing impervious surface will also be removed, for a net increase of approximately 59,750 square feet (1.4 acres) of impervious surface.

59. The proposed project will alter the existing stormwater management system at the Airport. The new taxiway system will fill approximately 0.8 acres of land that is currently a stormwater infiltration area located north of the existing Runway 14L end. Stormwater management practices will be investigated during final design to replace the associated stormwater storage volume. A drainage plan will be developed, including

investigation of stormwater management practices such as natural infiltration on site, flow attenuation by use of vegetated swales, and natural depressions and stormwater retention/detention.

60. The proposed project will not alter the course of any public waters or adversely impact the designated beneficial use of the surface waters in the watershed. Changes to impervious surfaces will result in increased runoff into the watershed, which will not be discharged directly into wetlands. A protective buffer strip at least 20 feet wide will be provided around wetlands.

61. The Airport is located within and subject to the stormwater management requirements of the Shingle Creek Watershed Management Commission (SCWMC). The Airport's current stormwater pollution prevention plan (SWPPP) will be revised to reflect the changes in impervious surface on the airfield and any associated new mitigation practices. To comply with national pollutant discharge elimination system (NPDES) stormwater permit requirements, MAC will create and SCWMC will review a separate construction SWPPP that describes the best management practices to be used during construction to control stormwater runoff will be created.

62. Most areas on and near the Airport are in an area of minimal flood hazard, according to FEMA's flood map service center. There is one Zone A special flood hazard area (SFHA) listed on the Airport and described in the EA/EAW. This area is subject to flooding by the one-percent-annual-chance flood event generally determined using approximate methodologies, with no base flood elevations or flood depths determined. The northeast side of the Airport has Zone A SFHA areas that are mostly aligned with Twin Creek, which flows through this location to the MAC conservation area. A small area of

floodplain extends south from the creek and then west toward the run-up pad near the intersection of Taxiways C and D near the Runway 24 end.

63. The flood insurance rate maps do not indicate any potential hazard zones near any proposed airfield improvements. The northeastern corner of the Airport includes a Zone A SFHA; however, this zone is outside the proposed non-aeronautical use area. Therefore, there are no impacts to floodplains associated with the proposed project.

64. Based on wetland boundary data collected during 2018 delineation and described in the EA/EAW, there are seven wetlands in and near the Airport. Two components of the proposed project potentially affect delineated wetlands: (1) the non-aeronautical development area; and (2) the southern perimeter road segment. The non-aeronautical development area contains three small wetlands. Two are located on the east side of the development area, and the other is located west of the Airport access road. The MAC will require site developers to comply with any wetland rules and buffer requirements set by the SCWMC.

65. The proposed perimeter road segment on the south side of the Airport will pass between the delineated boundaries of two small wetlands (referred to as Wetlands 1 and 3 in the EA/EAW), each approximately 0.03 acres. Preliminary estimates of grading limits for the proposed perimeter road segment indicate that fill activities will be required in both wetlands. Because of this impact, additional wetland survey efforts were conducted to determine if a perimeter road alignment exists that would avoid all wetland boundaries and meet FAA offset and safety requirements. These were ruled out by the larger potential fill of adjacent wetlands (referred to as Wetlands 6 and 7 in the EA/EAW), noise impacts to residential areas to the west, and proximity to runway safety areas.

66. Required fill within Wetlands 1 and 2 are estimated to be less than 1,000 square feet, which would not require a replacement plan according to Minnesota Statute 103G.2241, Subd. 9(d)(2). Because the disturbance to the wetlands for the proposed project is likely below this *de minimis* threshold, impacts will be minimal, and replacement of these wetlands is not expected to be required. If during detailed design it is determined that more than 1,000 square feet of wetlands will be affected, a replacement plan will be developed and implemented.

(xiv) Coastal Resources

67. The Coastal Zone Management Act (CZMA) of 1972 ensures the effective management and protection of the coastal zone. Under the statute, states prepare Coastal Zone Management Programs to implement protection of coastal areas. Minnesota approved the Lake Superior Coastal Program under the CZMA in 1999. The Airport is not within the coastal boundary as defined by the Lake Superior Coastal Program, so the EA/EAW does not analyze coastal impacts under the CZMA.

68. The Coast Barrier Improvement Act of 1990 prohibits federal financing for development of undeveloped coast barriers along the shores of the Great Lakes, including the Minnesota Point unit in Lake Superior, Minnesota. The proposed project will affect no coastal barrier resources.

(xv) Farmland

69. Farmland is defined by the FAA as those agricultural areas considered important and protected by federal, state, and local regulations. Important farmlands include all pasturelands, croplands, and forests (even if zoned for development) considered to be prime, unique, or of statewide or local importance. As there are no agricultural areas

within the area of study, farmlands are not applicable to nor affected by the proposed project.

(xvi) Land Use

70. The proposed project will shift Runway 14L/32R northwest approximately 115 feet and decommission Runway 14R/32L. This will not significantly change flight traffic patterns and impacts to surrounding land uses.

71. The proposed project will result in changes in incompatible uses in the runway protection zones (RPZs) off Airport property. Shifting Runway 14/32 approximately 115 feet to the northwest and designating it as a utility runway will result in relocating the Runway 32 RPZ entirely onto Airport property. The proposed Runway 14 RPZ will contain approximately 280 feet of Douglas Drive, but no residential parcels. Decommissioning Runway 14R/32L and converting it to a parallel taxiway will eliminate its RPZs. In addition, Runway 6R/24L will be shortened as part of the proposed project, which will result in the elimination of its RPZ conflicts with Bottineau Boulevard and Lakeland Avenue. However, the timing of the proposed project will result in the RPZ temporarily including a portion of the existing apron containing three aircraft tie-downs until the apron is expanded and aircraft parking is relocated outside of the RPZ. The proposed project will remove a total of three residential parcels from the RPZs and reduce the length of public roadways within these zones.

72. The MAC submitted an RPZ Alternatives Analysis to the FAA addressing the portion of Douglas Drive North in the Runway 14 RPZ and the aircraft tie-downs on the apron in the Runway 6R RPZ. In a letter dated May 8, 2018, the FAA concurred in the findings and approved these uses in the ultimate RPZs. This concurrence is subject to the

MAC working with the City of Brooklyn Park to consider installation of “Low Flying Aircraft/No Parking” signage on Douglas Drive North where it is located within the RPZ.

73. The proposed project will also result in changes to the number of private properties that fall within the forecast joint airport zoning board (JAZB) safety zones. Existing zoning is based upon the current location of the runways. The MAC will convene a JAZB comprised of representatives from local jurisdictions affected by the proposed zoning changes. As described in the EA/EAW, there are currently many privately-owned parcels within these zones, most of which are exempt from JAZB zoning because they are in Established Residential Neighborhoods. The extent of the off-Airport safety zones will be reduced by decommissioning Runway 14R/32L and shortening 06R/24L, as well as re-categorizing all runways as utility runways, which will result in narrower future zones. However, because of the lengthened and shifted Runway 14L/32R, the zones will include new parcels to the northwest and southeast of the existing zones.

74. There are expected to be fewer privately-owned parcels within the safety zones with the proposed project than under the existing ordinance. Under the no-action alternative, approximately 125 privately-owned parcels are in or partially within Safety Zone A and 277 are in or partially within Safety Zone B. Under the proposed project, the number of privately-owned parcels within or partially within these zones is expected to be

changed to approximately 143 within forecast Safety Zone A and 204 within forecast Safety Zone B.

75. The proposed project includes the development of an area on the north side of Airport property for non-aeronautical use.

76. The proposed project is not expected to generate significant additional vehicle traffic when compared to the no-action alternative. The proposed non-aeronautical development on the north side of the Airport will likely contribute minor additional traffic. The EQB EAW Guidelines published October 2013 indicate that for projects with only minor traffic impacts, generation of a maximum peak hour traffic estimate is not necessary. Therefore, such an estimate was not developed for the EA/EAW.

B. Cumulative Environmental Effects

77. Cumulative potential effects are effects on the environment that result from the incremental effects of the project under review in addition to other projects in the “environmentally relevant area” that might “reasonably be expected to affect the same environmental resources.” In other words, the cumulative potential effects analysis examines whether the incremental effects of a proposed project, combined with other projects in the same geographic area and taking place over the same period, will have a significant effect on the same environmental resources.

78. The recent and planned actions described in the EA/EAW, when combined with the proposed project at the Airport, do not have significant cumulative effects on environmental impact categories in the vicinity of Crystal Airport. Many of the past and planned projects near the Airport are related to transportation along the Bottineau

Boulevard corridor and could in combination have an impact on the land use adjacent to the Airport. However, the proposed action does not contribute to these impacts.

79. Impacts of the proposed project when considered with past or future actions do not constitute a significant impact that cannot be mitigated. All future actions will be subject to avoidance and minimization studies and will undergo agency permitting as required. Every effort will be made to avoid or minimize impacts where feasible. No significant cumulative impacts or cumulative potential effects are associated with the proposed action.

C. Mitigation of Environmental Effects by Ongoing Public Regulatory Authority

80. Environmental effects of the proposed project are subject to mitigation by ongoing public regulatory authority.

81. The EA/EAW describes that the MAC will mitigate increased emissions associated with the proposed project's construction by using voluntary best management practices (BMPs) such as engine idling restrictions and maintenance requirements, and other control strategies identified in the *United States Environmental Protection Agency Diesel Emission Restriction Checklist*.

82. The MAC will mitigate any temporary impacts to water quality during construction by implementing BMPs, including stormwater erosion and sediment control practices such as installation of silt fences, temporary sediment basins, inlet protection, and erosion control blankets. An erosion and sediment control plan will specify temporary and permanent erosion control measures in compliance with local, state, and federal regulations.

83. The MAC will mitigate construction noise through implementation of construction practices specified in FAA Advisory Circular (AC) 150/5370-10E, *Standards for Specifying Construction of Airports*. The MAC will also include contract provisions requiring construction noise mitigation.

84. Introduction and spread of invasive species at the Airport will be minimized prior to, during, and after construction of the proposed project through many BMPs. Prior to construction, standard cleaning procedures of equipment used on-site will minimize the introduction of exotic invasive species from outside the Airport. Storage and cleaning of equipment and materials in established staging areas during construction will also minimize the spread of invasive plant seeds to off-site areas or other areas on-site. Areas disturbed during construction will be seeded with many turf grasses.

85. To avoid and minimize impacts on potential habitat for the northern long-eared bat and migratory birds, the MAC will complete tree clearing between October 1 and April 30. Additionally, USFWS/USDOT avoidance and minimization measures will be implemented.

86. The proposed project will result in changes to certain existing lighting systems, including the existing medium intensity runway edge lighting (MIRL) systems, precision approach path indicator (PAPI) lights, and runway end identifier lights (REIL). Lighting systems at the Airport may be remotely activated by pilots by radio, so the systems need only be in full effect when in use by approaching and departing aircraft. Methods for visual screening and use of energy-efficient LED lights will be considered during project design.

87. The MAC will conduct noise level reduction testing of four residential structures within the 65 DNL noise contour to determine eligibility for federal residential noise mitigation funding.

88. The MAC will revise the Airport's current SWPPP to reflect changes in impervious surface on the airfield and any new associated new mitigation practices. On-site best management practices will be established for the ongoing stormwater monitoring and management activities at the Airport. Additionally, a separate construction SWPPP will be created by the MAC and reviewed by the Shingle Creek Watershed Management Commission (SCWMC). Mitigation requirements will be implemented in accordance with permits or approvals for the NPDES multi sector general permit or SCWMC permits.

89. The MAC will convene the Joint Airport Zoning Board to revise the existing airport zoning ordinance and work with the City of Brooklyn Park to address any necessary land use zoning changes for non-aeronautical development.

90. The MAC must obtain required permits or approvals in compliance with the Minnesota Wetland Conservation Act (WCA) and will implement the mitigation requirements of those permits or approvals. In addition, the MAC will follow the rules and regulations of the SCWMC, including upland buffer vegetation requirements for wetlands, streams, and lakes.

D. Other Available Environmental Studies

91. There are no other available environmental studies evaluating the extent to which the environmental effects of the proposed project can be anticipated and controlled.

CONCLUSIONS

1. A FONSI/ROD determining that the EA/EAW for the proposed project is adequate under NEPA and there are no significant impacts associated with the proposed project was issued by the FAA on July 31, 2019.

2. The MAC has the authority to determine whether the proposed project is exempt from environmental review under MEPA.

3. The MAC has the authority to determine whether the proposed project “may have the potential for significant environmental effects.” Minn. R. 4410.1000, subp. 3(B).

4. The MAC has the authority to determine whether the proposed project “has the potential for significant environmental effects” and requires preparation of an EIS under MEPA. Minn. R. 4410.1700, subp. 7. The four criteria for determining whether the proposed project has the potential for significant environmental effects are: (a) the type, extent, and reversibility of the project’s environmental effects; (b) the cumulative potential effects of related or anticipated future project; (c) the extent to which the project’s environmental effects are subject to mitigation by ongoing public regulatory authority; and (d) the extent to which the project’s environmental effects may be anticipated and controlled because of other available environmental studies. *Id.*

5. The proposed project is not exempt from environmental review under MEPA.

6. The proposed project may have the potential for significant environmental effects.

7. The FAA has prepared a federal EA under NEPA for the proposed project because the project will require federal approval. The MAC has the authority to circulate the federal EA in place of an EAW form under MEPA because the federal EA for the

proposed project addresses the impact categories discussed in the EAW form. Minn. R. 4410.1300.

8. Application of the four criteria to determine whether MEPA requires preparation of an EIS for the proposed project reveals that the project does not have the potential for significant environmental effects and that preparation of an EIS is unnecessary.

9. The type, extent, and reversibility of the proposed project's environmental effects demonstrate that an EIS is unnecessary.

10. Under the proposed project, there will be slight emissions increases in 2025 but changes are below the *de minimis* thresholds for maintenance areas identified by the FAA Aviation Emissions and Air Quality Handbook Version 3, Update 1 (January 2015). The proposed project's air emissions do not have the potential for significant environmental effects.

11. Construction impacts from the proposed project will be temporary, *de minimis*, and subject to mitigation by best management practices. Therefore, the proposed project's construction impacts do not have the potential for significant environmental effects.

12. Construction of the proposed project will cause an increase in greenhouse gas emissions, as expressed as CO₂e, of only 2,483 tons over a two-year period. On-site operational CO₂e emissions attributable to aircraft operations in 2025 under the proposed project are expected to increase by approximately 59 tons. The proposed project's greenhouse gas emissions do not have the potential for significant environmental effects and are not expected to have an adverse effect on climate change.

13. Aircraft noise impacts are improved under the proposed project. Twelve residential parcels are in or partially within the 65 DNL contour in the 2025 no action alternative. The proposed project 2025 forecast shows a reduction from twelve to four residential parcels in or partially within the 65 DNL contour because of closing Runway 14R/32L. The 65 DNL and greater contours are otherwise all contained on Airport property. Furthermore, there are no areas within the 65 DNL contour that will experience an increase of 1.5 dB DNL or more; therefore, there will be no significant noise impacts under the proposed project.

14. The proposed project is not expected to influence economic activity in the area, and will it not cause any relocation or disruption of the established community. Proposed non-aeronautical development on the north side of the Airport will increase the City of Brooklyn Park tax base, resulting in some new economic activity, and generate some traffic in the area. However, these impacts are not significant within the context of the activity already occurring in this fully developed urban area. Therefore, the proposed project will not produce significant induced or secondary socioeconomic impacts.

15. No significant off-Airport impacts associated with the proposed project affect environmental justice populations. No potential health or safety risks to children are expected. Therefore, the proposed project's environmental justice impacts do not have the potential for significant environmental effects.

16. The FAA and the United States Fish and Wildlife Service have determined that the proposed project is not likely to adversely affect the rusty-patched bumble bee, a federally-listed endangered species, the northern long-eared bat, a federally-listed threatened species, or the bald eagle, a federal protected species. Additionally, bird species

protected by the Migratory Bird Treaty Act (MBTA) were documented within six miles of the Airport in USFWS surveys conducted in the past ten years. Prior to any construction, an MBTA nesting bird survey will be completed. The MAC will carefully target the removal of on-Airport and off-Airport trees in the approaches to Airport runways under the proposed project. Additionally, the MAC will maintain current vegetation management practices at the Airport to minimize wildlife hazards and invasive species under the proposed project. Therefore, the proposed project's impacts to biological resources do not have the potential for significant environmental effects.

17. There are two Section 4(f) properties (publicly owned parks, recreation areas, wildlife and waterfowl refuges, or public and private historic properties) bordering the Airport. The proposed project will not constitute a use of these two Section 4(f) properties because the settings of the parklands are projected to remain in the same condition regarding land cover, visual environment, and noise levels as they would with the no-action alternative. There is one Section 4(f) property under the extended centerline for Runway 14L/32R with proposed tree removal. Therefore, a Section 4(f) Evaluation report was developed as part of the EA/EAW and made available for public review and comment concurrent with the Draft EA/EAW document. The FAA issued a Preliminary Finding on February 11, 2019, that the proposed action will not significantly affect Edgewood Park and issued a *de minimis* Section 4(f) finding. The City of Brooklyn Park concurred in this finding. Therefore, the proposed project does not have the potential for significant environmental effects on such resources.

18. There are no hazardous materials or solid waste impacts expected for the proposed project, and the proposed project will not interfere with any ongoing remediation

of existing contaminated sites in the immediate vicinity of the project area. Therefore, the proposed project has no potential for significant effects associated with hazardous waste or solid waste disposal, or pollution prevention.

19. The proposed project will not adversely affect any properties eligible for listing on the National Register of Historic Places. The FAA has determined there are no historic properties affected by the proposed project, and the SHPO concurred in the FAA finding. The proposed project does not have the potential for significant effects on historical, architectural, archaeological, and cultural resources.

20. New airport lighting systems will be similar in type and location to the existing airport lighting systems and will be in full effect only when in use by approaching and departing aircraft and during low visibility conditions or at night. The proposed project's light emissions and visual effects do not have the potential for significant environmental effects.

21. The proposed project's increased electrical consumption will not exceed existing supply, and the proposed project will use no unusual raw materials or natural resources, or any materials in short supply. Therefore, the proposed project's impacts on natural resources and energy supply do not have the potential for significant environmental effects.

22. The proposed project will have a net increase of approximately 1.4 acres of impervious surface. The proposed project will not alter the course of any public waters, nor will it adversely impact the designated beneficial use of the surface waters in the watershed. FEMA flood insurance rate maps do not indicate any potential hazard zones near any proposed airfield improvements. The northeastern corner of the Airport includes a Zone A

SFHA; however, this zone is outside the proposed non-aeronautical use area. Therefore, there are no impacts to floodplains associated with the proposed project. The proposed project will directly affect two wetlands, totaling approximately 0.06 acres in size. Required fill within these wetlands is estimated to be less than 1,000 square feet, which would not require a replacement plan according to Minnesota Statute 103G.2241, Subd. 9(d)(2). Because the disturbance to the wetlands for the proposed development is likely below this de minimis threshold, impacts will be minimal, and replacement of these wetlands is not expected to be required. Therefore, the proposed project does not have the potential for significant environmental effects on water resources.

23. The proposed project is not within any defined coastal boundary, will affect no coastal barrier resources, and as a result does not have the potential for significant environmental effects.

24. The proposed project is not within any farmland areas. Therefore, the proposed project does not have the potential for significant environmental effects on farmland.

25. Cumulative effects, or impacts on the environment that result from the incremental impact of the action when added to past, present, and reasonably foreseeable development in the area not directly associated with the proposed development, do not constitute a significant impact that cannot be mitigated. All future actions will be subject to avoidance and minimization studies and will undergo agency permitting as required. Every effort will be made to avoid or minimize impacts where feasible. No significant cumulative impacts or cumulative potential effects are associated with the proposed project.

26. Certain environmental effects of the proposed project are subject to mitigation by ongoing public regulatory authority.

27. Any finding more properly considered a conclusion shall be considered a conclusion. Any conclusion more properly considered a finding shall be considered a finding.

ORDER

Based upon the above findings of fact and conclusions, and the entire administrative record of the proceeding, the Metropolitan Airports Commission (MAC) determines and declares that the Final Environmental Assessment/Environmental Assessment Worksheet for the proposed project is adequate under the Minnesota Environmental Policy Act (MEPA), that the proposed project does not have the potential for significant environmental effects, and that preparation of an environmental impact statement (EIS) for the proposed project is not required. The MAC is issuing a negative declaration on the need for an EIS under MEPA.

DATED: 8-19-19 METROPOLITAN AIRPORTS COMMISSION



Rick King
Chair

U.S. Department of Transportation
Federal Aviation Administration
Great Lakes Region
Dakota-Minnesota Airports District Office

Finding of No Significant Impact/
Record of Decision

For Airfield and Associated Improvements at the
Crystal Airport
Cities of Crystal, Brooklyn Park and Brooklyn Center
Hennepin County, Minnesota

July 2019

I. Introduction

The Federal Aviation Administration (FAA) prepared this Finding of No Significant Impact/Record of Decision (FONSI/ROD) for a project analyzing airfield and associated improvements at the Crystal Airport (MIC), which is owned and operated by the Metropolitan Airports Commission (MAC). The attached Final Environmental Assessment (FEA), dated July 2019, has been prepared in accordance with the guidelines and requirements set forth by the Council on Environmental Quality (CEQ) and the FAA to implement the environmental review and disclosure provisions of the National Environmental Policy Act of 1969 (NEPA).

In accordance with FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, FAA Order 5050.4B, *NEPA Implementing Instructions for Airport Actions*, and based on the evaluation in the FEA, there are no significant impacts associated with the proposed project. Therefore, a Federal Environmental Impact Statement (EIS) will not be prepared and a FONSI/ROD is being issued. This FONSI/ROD provides a summary of the Proposed Action, mitigation requirements, and the basis for the FAA's finding.

Since the project was reviewed under a joint Federal Environmental Assessment/Minnesota Environmental Assessment Worksheet, this FONSI/ROD will only be used to fulfill Federal requirements under the NEPA. As the Responsible Government Unit (RGU) for the project under the Minnesota Environmental Policy Act (MEPA), the MAC has prepared separate Findings of Fact and Conclusions of Law in order to fulfill the requirements of MEPA and Minnesota Rule 4410.1700.

II. Purpose and Need (Chapter 2 of FEA)

The purpose of the proposed action at MIC is to address airfield safety concerns through implementation of goals outlined in the 2035 long-term comprehensive plan (LTCP) including:

- 1) Align airfield infrastructure to meet existing and forecasted operations;
- 2) Preserve and improve operational capabilities for critical design aircraft; and
- 3) Enhance safety by simplifying the runway and taxiway layout.

The frequency of runway incursions at MIC has caused the FAA to include the Airport in its national initiative known as the runway incursion mitigation (RIM) program.

The proposed action is needed to create a safer operating environment, address deficiencies identified in the RIM program, and diversify Airport revenue opportunities. The following seven objectives define the proposed action:

- 1) Enhance safety by simplifying airfield geometry;
- 2) Provide the required runway length for critical design aircraft needs;
- 3) Enhance instrument approach capability and mitigate penetrations for both ends of the main primary runway;
- 4) Improve Airport ground vehicle circulation;
- 5) Increase aircraft apron parking capacity;
- 6) Seek a land release for non-aeronautical use for certain Airport property; and
- 7) Keep Runway Protection Zones (RPZs) on Airport property to the extent practicable.

III. Alternatives (Chapter 3 of the FEA)

In accordance with FAA Order 1050.1F, the EA identified and evaluated an array of reasonable alternatives, including the no-action and proposed action. The Final EA provides analysis on the alternatives analyzed.

The no-action alternative would result in some tree removal or trimming to keep existing threshold siting surfaces free from obstructions. This alternative would not meet the purpose and need, as it 1) does not enhance safety by simplifying airfield geometry, 2) does not provide the required primary runway length, 3) does not enhance instrument approach capability, 4) does not improve ground vehicle circulation, 5) does not increase aircraft apron parking capacity, 6) does not seek a land release for non-aeronautical use, and 7) does not keep RPZs on Airport property to the extent practicable.

Relocate Airport. Finding a new site in the northwest metropolitan area that could accommodate the based and transient general aviation users of MIC was considered. The site would have to be in an undeveloped area with the ability to control existing and future land use around the site and maintain compatibility with airport operations on the site. MIC currently comprises approximately 436 acres of land. Development of a new site to replace the Airport's size and function would likely result in substantial impacts to one or more environmental resources such as wetlands, woodlands, surface waters, natural areas, public parks, and existing urban infrastructure. Closing the Airport would mean abandoning substantial public and private investment in the Airport site and burden existing tenants by forcing them to relocate to the new airport. Furthermore,

given land acquisition and other costs associated with the construction of a new airport, relocating the Airport is not practicable or feasible.

Use Alternate Existing Airports. MAC also considered using MAC's six other reliever airports rather than making the improvements at MIC. Crystal Airport is an important part of the MAC's general aviation reliever airports system and serves a vital function in helping MAC fulfill its legislative mandates. The FAA designates MIC as a "Reliever Airport" for Minneapolis-St. Paul International Airport (MSP). Federal statutes define a "Reliever Airport" under U.S. Code § 47102 as "an airport the Secretary designates to relieve congestion at a commercial service airport and to provide more general aviation access to the overall community." The FAA further designates MIC as a Regional General Aviation Airport, which is defined by a 2012 FAA ASSET study as an airport that "supports regional economies by connecting communities to statewide and interstate markets."

The MAC operates MIC and five other general aviation airports as reliever airports for MSP. The purpose of these airports is to relieve congestion at MSP by providing infrastructure to accommodate the region's general aviation needs. MIC complements the primary relievers in the MAC's system by accommodating personal, recreational, and some business aviation users within a specific service area. MIC is intended for use primarily by small propeller-driven aircraft and provides direct air connection to the northwest suburbs of the Twin Cities. Use of the other reliever airports in lieu of improving MIC would not address the needs of the MAC's airport system and would detract from each airport's ability to serve its intended purpose within the system.

In addition, use of alternate existing airports in lieu of improving MIC would not meet the project purpose, because using alternative existing airports would not preserve and improve operational capabilities for the design aircraft. For these reasons, using MAC's five other reliever airports in lieu of making the improvements at MIC is not a reasonable alternative.

Primary Runway Alternative A: Convert Runway 14/32 Blast Pads to Stopway

Primary Runway Alternative A considered converting the 500-foot paved blast pads at the ends of Runway 14/32 to stopways. Pavement designated as stopway can be considered useable length for decelerating during an aborted takeoff and can therefore be used for accelerate-stop distance calculations. An accelerate-stop distance (ASDA) of nearly 3,800 feet can be provided by converting Runway 14/32 blast pads to stopway, which may allow some aircraft to depart at a higher takeoff weight when ASDA is a limiting factor. This alternative increases ASDA, but not the landing distance available (LDA), takeoff distance available (TODA), or takeoff run available (TORA), and the published runway length of 3,267 feet would not change. This length is lower than the recommended runway length determined during the LTCP process. Therefore, this

alternative was removed from further consideration because it does not provide the required runway length for critical design aircraft needs.

Primary Runway Alternative B: Convert Runway 14/32 Blast Pads to Runway

Primary Runway Alternative B considered converting the 500-foot paved blast pads on each end of Runway 14/32 into useable runway. Taxiway extensions would be added to the ends of the existing blast pad pavement for aircraft access. The alternative would result in a 4,267-foot published runway length, which is longer than the recommended runway length. The alternative may attract aircraft types larger than the targeted design aircraft family, specifically those with a maximum certificated takeoff weight greater than 12,500 pounds. Regular use by larger aircraft would change the role of MIC, which MAC is not seeking to do because of the proximity to Flying Cloud and Anoka County-Blaine Airport, which are both equipped to handle larger aircraft. Therefore, this alternative was removed from further consideration because it does not better align airfield infrastructure to match existing and forecasted activity levels.

FAA Advisory Circular 150/5325-4B recommends a primary runway length of 3,900 feet for the 100 percent of fleet subcategory of small propeller-driven aircraft weighing less than 12,500 pounds and with fewer than 10 passenger seats. If Primary Runway Alternative B were scaled back to a 3,900-foot published runway length, it would reduce the likelihood of attracting aircraft types larger than the targeted design aircraft. However, based on the runway length assessment and input received at community and stakeholder meetings, the Airport sponsor determined that a runway length slightly shorter than the FAA recommended 3,900 feet would accommodate user needs in most scenarios and provide a substantial safety and operational improvement over the current primary runway length. Disadvantages associated with a 3,900-foot primary runway length at MIC include increased capital costs to install and maintain additional airfield infrastructure, increased noise contour and light exposure footprints by moving the start of takeoff closer to residential areas, expanded state safety zone footprints, and increased perception from the community that improvements are designed to attract larger aircraft. For these reasons, a 3,900-foot primary runway length was removed from further consideration.

Turf Runway Alternative B: Designated Turf Area Adjacent to Paved Runway

Turf Runway Alternative B in the 2035 LTCP considered decommissioning Runway 06R/24L (turf) and allowing aircraft to land in a designated turf area adjacent to a paved runway, within that runway's operational environment, at the pilot's own risk. This alternative was removed from further consideration by this EA/EAW because it does not comply with current FAA airport design standards intended to promote the safety of aircraft operations, and therefore does not enhance safety at MIC.

Taxiway System Alternative A

Taxiway System Alternative A considered:

- Converting Taxiway E into an apron edge taxilane between Taxiways A and E1.
- Removing the section of Taxiway E that crosses Runways 06L/24R and 06R/24L between Taxiway A and Taxiway B, to eliminate two runway crossings where runway incursions may occur.
- Removing the section of Taxiway E3 between Runway 14/32 and the future parallel taxiway, to eliminate direct apron-to-runway access.
- Removing the section of Taxiway E2 between Taxiway E and the future parallel taxiway, to eliminate direct apron-to-runway access.
- Extending Taxiway B between Taxiway E and the future parallel taxiway (existing Runway 14R/32L).

This alternative was folded into Taxiway System Alternative A1 below.

IV. Proposed Action (Chapter 3 of the FEA)

Turf Runway Alternative A: Retain Runway 06R/24L (turf) & Reduce Length to 1,669 ft.

Because it would simplify airfield geometry and meet the runway length needs of existing users, Turf Runway Alternative A is the preferred turf runway alternative. Turf Runway Alternative A considered preserving turf operations by maintaining turf crosswind Runway 06R/24L. The runway length would be reduced to 1,669 feet so that Taxiways D and F would no longer conflict with the runway safety area (RSA), runway object free area (ROFA), runway object free zone (ROFZ), or approach surface. This would enhance safety and reduce areas with the greatest potential for pilot confusion. Based on discussion with based tailwheel-type aircraft operators during the recent 2035 LTCP process and an analysis of the needs of these types of aircraft based at MIC, this reduced length meets existing user needs. Under this alternative, the threshold for Runway 06R/24L would be accessed via the proposed parallel taxiway (decommissioned Runway 14R/32L).

This alternative would include converting the existing “mandatory” runway hold short locations at crossing Taxiways D and F to “holding positions for runway approach area” locations (“approach holds”). This is appropriate, as these crossing taxiways will no longer penetrate the RSA, ROFA, or ROFZ. The primary operational benefit of employing “approach holds” is that air traffic control tower (ATCT) controllers will only have to hold an aircraft short of the turf runway at crossing Taxiways D and F when there is an arrival or departure operation on the turf runway. When no operations are occurring on the turf runway, aircraft are not required to hold short of the runway. When a hold is needed, the appropriate hold short lines and signs will be in place. This is intended to reduce air traffic controller workload, the potential for pilot/vehicle operator

confusion, and incursions associated with runway hold short instructions at hot spots 4 and 5 should these be eliminated by the FAA Runway Safety Action Team (RSAT). The existing hold line locations will remain in place because an aircraft holding at this location would not penetrate the Type 1 threshold siting surface (TSS). A Form 5010 note and permanent Notice to Airmen (NOTAM) would be published stating that the turf runway is closed to operations when the ATCT is closed.

Under this alternative, the distance between the edges of turf Runway 06R/24L and adjacent paved crosswind Runway 06L/24R will remain less than 200 feet. Aircraft cannot use one runway when the other runway is in use in the same direction. However, runway operations will continue to be controlled during ATCT hours, mitigating the risk of both runways being used at the same time.

Primary Runway Alternative C: Convert Portions of Existing Runway 14/32 Blast Pads to Runway, and Shift Runway Approximately 115 feet to the Northwest.

This alternative considers turning only a portion of each blast pad into useable runway, which would result in a published runway length and ASDA of 3,750 feet. The extended runway would be nearly 500 feet longer than the existing runway and would align with the recommended runway length. Because of the constrained nature of the Airport, this alternative uses declared distances and displaced thresholds, which means not all the published pavement would be available for landing and takeoff movements in each direction. Ideally, the entire runway length would be available to accommodate all takeoff and landing distance categories. However, for the designated critical design aircraft, ASDA typically emerges as the most critical (longest) length requirement to consider. Thus, the preferred alternative should seek to maximize ASDA. In addition to the increased ASDA, all aircraft users would benefit from having a total of approximately 3,500 feet of useable runway pavement available for takeoff and landing movements, or more than 200 additional feet. With the increase in published runway length (from 3,267 feet to 3,750 feet), the number of additional aircraft operations above the 2017 base case is estimated to be approximately 314 annually by 2035, translating to approximately six additional takeoffs and landings per week. The majority of additional operations are expected to be from turboprop aircraft.

The alternative also proposes shifting Runway 14/32 by 115 feet to the northwest along the runway centerline. Shifting the runway northwest would place the RPZs fully within MAC-owned property, which would better conform to FAA standards regarding RPZ land use. This alternative meets the project goals and objectives, and better conforms to FAA design standards when compared to other alternatives.

Because the Runway 14 landing threshold would be relocated by this alternative, it would require a revision to the Runway 14 instrument approach procedures. This alternative also includes replacing the Runway 32 visual approach slope indicator

(VASI) with a precision approach path indicator (PAPI); relocating the runway end identifier lights (REIL) to correspond with the relocated runway ends; and adjusting and extending the medium intensity runway and taxiway edge lighting (MIRL/MITL) systems to correspond with the proposed runway length.

The alternative proposes changing the designation of Runway 14/32 to Utility. The projected fleet mix for 2025 anticipates fewer than 10 annual operations by aircraft with maximum certified takeoff weights of more than 12,500 pounds. Changing the existing and planned runway designations would reflect the needs of the Airport's users. It would also reduce the size of the RPZs prescribed by FAA AC 150/5300-13A, because the runway would be designed for small aircraft exclusively. Decommissioning Runway 14R/32L and shortening Runway 06R/24L would reduce incompatible land use, but it would not improve RPZ compatibility off the remaining runway ends. Changing the existing and planned designation for Runway 14/32 to Utility and designing the runway for small aircraft exclusively would further reduce the number of residential parcels within the RPZ.

Taxiway System Alternative A1

Based on input received from ATCT and Airport Operations staff, additional taxiway system alterations were considered to make the airfield more efficient and further simplify geometry. Taxiway System Alternative A1 includes the concepts proposed by Taxiway System Alternative A, as well as:

- Removing Taxiways E2 and E3 between Taxiway E and the future parallel taxiway to eliminate direct apron-to-runway access and replacing them with a single new connector located between the removed taxiway sections. Unlike Taxiway System Alternative A, Taxiway E3 between Runway 14/32 and the future parallel taxiway would be retained to improve the efficiency of aircraft exiting the runway after landing.
- Removing existing runway end connectors for Runway 14/32 (Taxiways E1 and E4), and replacing with connectors to the full parallel taxiway at the new runway ends.
- Offsetting the Taxiway B extension between Taxiway E and the future parallel taxiway by approximately 100 feet northwest to provide additional distance before the Runway 06L/24R hold short position.
- Adding new engine-run up pads on either end of Runway 14/32 on its northeast side.

This alternative enhances safety by simplifying the runway and taxiway layout, while eliminating unnecessary runway crossings and direct apron-to-runway taxiway connections. It also conforms to FAA guidelines regarding taxiway design and considers input from ATCT and Airport Operations staff.

FBO Apron Expansion. Expanding the FBO apron to improve circulation and increase the number of aircraft tie-downs is also proposed. A location west of the existing apron along the air operations area (AOA) perimeter fence and outside the future Runway 06L/24R RPZ is proposed. This location adds seven tie-down spaces and removes three previous spaces where existing tie-down spaces would be converted to taxilane. This would result in ten available tie-down spaces. This net gain in spaces would improve operational capabilities and better align available aircraft parking with existing and forecasted demand. This would also meet the project objective to increase aircraft parking apron capacity by addressing the occasional shortage of tie-down space for transient aircraft and improving the flow of aircraft traffic to and from the FBO apron.

On Airport Service Roads. Additional on-Airport service roads around runway ends are needed so that vehicles, including fuel trucks, do not have to cross active runways to reach hangar areas. Airport service roads are contemplated in three places including: around both the north and south ends of Runway 14/32, and around the west ends of Runways 06R/24L and 06L/24R. This would lower the potential for runway incursions by reducing the number of runway crossings by ground vehicles, thereby enhancing safety and improving ground vehicle circulation at the Airport.

Land Use for Non-Aeronautical Development. MIC has several areas that are not used for aeronautical purposes or planned for Airport use in the long-term. Undeveloped areas along 63rd Avenue North and near Bass Lake Road are appropriate parcels for non-aeronautical development.

The proposed non-aeronautical development is complementary to aligning the airfield infrastructure to match expected activity levels, as portions of Airport property are not planned for Airport use in the future. The parcels on the north side of the Airport along 63rd Avenue North are the most feasible for non- aeronautical development at this time. This area is currently undeveloped, which means that existing facilities would not need to be relocated prior to development. The northeast corner is unsuitable for Airport development due to a wetland complex surrounding Twin Creek that isolates it from the rest of the property. The proposed non-aeronautical use would be limited to the area west of this wetland complex on both sides of the 63rd Avenue North entrance road. Existing mixed-use commercial and residential areas across 63rd Avenue North would be compatible with non-aeronautical development on Airport property. The proposed non-aeronautical use area is in a City of Brooklyn Park Public Institution special zoning district. Rezoning of the property may be necessary for future tenants to obtain building permits from the City.

Summary of the Proposed Action

A succinct summary of the proposed action consists of the following components:

- Decommission Runway 14R/32L and convert it to a full parallel taxiway for primary Runway 14/32, extended to the new runway ends.
- Convert portions of primary Runway 14/32 blast pads to usable runway for a total published length of 3,750 feet with declared distances and change the runway designation to Utility.
- Shift primary Runway 14/32 approximately 115 feet to the northwest along its centerline.
- Reduce the length of existing Runway 06R/24L (turf) to 1,669 feet to clear Taxiways D and F from its RSAs.
- Revise the existing Runway 14 instrument approach procedure and establish a non-precision GPS-based instrument approach procedure (LNAV) to the Runway 32 end.
- Replace the Runway 32 VASI with a PAPI.
- Relocate the REIL systems to correspond with relocated thresholds on both ends of Runway 14/32.
- Adjust and extend the MIRL and MITL systems to correspond with the proposed primary runway length.
- Convert Taxiway E into an apron edge taxilane between Taxiways A and E1.
- Remove the section of Taxiway E that crosses Runways 06L/24R and 06R/24L between Taxiway A and Taxiway B.
- Remove Taxiways E2 and E3 between Taxiway E and the future parallel taxiway and replace them with a single new connector located between the removed taxiway sections.
- Add a connector taxiway between Taxiway E and the future parallel taxiway offset from existing Taxiway B by approximately 100 feet to the northwest.
- Remove existing runway end connector Taxiways E1 and E4 and replace with connectors from the future parallel taxiway to the new Runway 14/32 ends.
- Add new engine-run up pads on either end of Runway 14/32 on its northeast side.
- Construct on-Airport perimeter roads around runway ends on the north, west, and south sides of the airfield to allow ground vehicles to circulate without crossing runways.
- Expand the FBO apron to increase available tie-down spaces for aircraft and remove tie-downs from the Runway 06R RPZ.
- Release certain Airport property for non-aeronautical use along 63rd Avenue North, in the area west of the Twin Creek wetland complex and on both sides of the 63rd Avenue North entrance road.

V. Environmental Impact Categories of the Proposed Action (Chapter 4 FEA)

Environmental impact categories identified in FAA Orders 1050.1F and 5050.4B were evaluated in the FEA. The proposed action is consistent with community planning per paragraph 6.3b(2) of Order 1050.1F. Given the location and nature of the Proposed Action, impacts to the following environmental resources and impact categories do not occur:

- Coastal Resources
- Farmlands

The FEA discusses the environmental consequences of the Proposed Action, which are described in the following impact categories:

Air Quality:

The MAC developed an aviation operational emissions inventory using the FAA Aviation Environmental Design Tool (AEDT) model. Emissions were modeled for the scenarios analyzed for aircraft noise. The study area for emissions is on Airport property. Emissions were calculated for the 2017 baseline (existing conditions) and 2025 forecast (preferred alternative and no- action alternative) scenarios. The year 2025 was chosen for analysis because it is expected to be five years after project implementation. The no-action alternative (2025) scenario was modeled using 39,025 aircraft operations, and the preferred alternative (2025) scenario was modeled using 39,258 aircraft operations. The 2025 operations projections were developed based on the 2035 LTCP forecasts. The AEDT model estimates an overall increase in pollutant emissions between the 2017 baseline and 2025 forecast scenarios. The increase is caused by the increased aircraft operations anticipated by both the 2025 no-action and preferred alternative forecast. Although there are slight operational emissions increases in 2025 under both the no-action and preferred alternatives, changes in emissions are below the *de minimis* thresholds for maintenance areas.

The Airport Construction Emissions Inventory Tool (ACEIT) was used to model construction activities for the preferred alternative. Total emissions associated with construction are not expected to exceed the *de minimis* thresholds listed in the FAA's Aviation Emissions and Air Quality Handbook. Construction emissions will be offset through use of voluntary best management practices (BMPs) such as engine idling restrictions and maintenance requirements, and other control strategies identified in the *U.S. Environmental Protection Agency Diesel Emissions Restriction Checklist*.

The proposed perimeter roads will not create additional traffic because they will accommodate existing traffic that currently crosses the airfield. The travel distance across the airfield will be longer using the new service roads, but idling time where vehicles currently must hold short of runways and taxiways will be reduced. For these reasons, significant increases in vehicle emissions are not expected with the preferred alternative. Based on these factors, significant air quality impacts are not anticipated for the preferred alternative or no-action alternative.

Biological Resources (including Fish, Wildlife and Plants):

Biological resources potentially affected by the preferred alternative are related to vegetation management and listed species.

The Northern Long Eared Bat (NLEB) is federally listed as threatened and has potential habitat within the project area. The USFWS concurred with a may affect, not likely to adversely affect determination on March 15, 2019 by utilizing recommended avoidance and minimization measures.

The Rusty Patched Bumble Bee (RPBB) is federally listed as endangered in the project area. The USFWS concurred with a no effect determination for this species on March 15, 2019.

Seven bird species protected by the Migratory Bird Treaty Act (MBTA) can be found near the Airport that have nesting seasons that fall between May and October. These species include the black-billed cuckoo, the eastern whip-poor-will, the golden-winged warbler, the least bittern, the red-headed woodpecker, the willow flycatcher, and the wood thrush. These species have been documented by USFWS survey sources during these months within approximately six miles of the Airport within the past ten years. The breeding season for the bald eagle extends from December to August; however, eagles typically nest near bodies of water and away from developed areas. The other listed birds nest elsewhere in their range or have not been observed in the project area during nesting season. Many of the birds are typically found in densely wooded or wetland habitats, and while they are not likely to be affected by the proposed project where ground disturbances will primarily be limited to regularly mowed airfield areas, off-Airport tree removal has the potential to disturb some wooded wetland habitat.

The proposed action will require the removal of trees on Airport property to accommodate future non- aeronautical development along 63rd Avenue North, as well as removal or trimming of several off-Airport trees to clear the applicable runway approach TSS. An obstruction analysis conducted for the recent Airport Layout Plan (ALP) update identified several trees in the approach and departure areas. The MAC proposes to remove or trim any on- or off-Airport trees currently penetrating the applicable approach TSS prescribed by FAA AC 150/5300-13A, *Airport Design*, Draft Change 2, as well as any additional trees that should be removed or trimmed to provide a clear approach TSS for a reasonable period beyond project implementation. The timeframe analyzed in the EA/EAW document is eight years, which includes time for the environmental review and design phases and provides a forecast for approximately five years from project implementation. The MAC also proposes to remove or trim any on-Airport trees that penetrate the departure surface defined by FAA Order 8260.3D, *U.S. Standard for Terminal Instrument Procedures* (TERPS). Off-Airport trees penetrating the departure surface will remain, as these trees may be avoided through use of notes

published in instrument departure procedures. The MAC will continue to monitor tree growth and request that FAA publish obstacle notes in the flight procedures, as needed.

A Tree Mitigation and Growth Analysis report completed in May 2018 compared tree heights from 2013 Airports Geographic Information System (AGIS) data to a December 2017 spot survey, and incorporated growth rates observed by a certified arborist in May 2018. This study established appropriate growth rates to determine if trees are likely to penetrate the approach TSS within five years of project implementation. The study also considered the growth rate of 2.5 feet per year suggested by the FAA in Engineering Brief 91, *Management of Vegetation in the Airport Environment*.

Some trees near the Airport will require removal under the no-action alternative. Monitoring tree heights and removing or trimming potential obstructions is an ongoing maintenance measure. An obstruction analysis conducted in 2018 identified approximately eight existing off-Airport points currently penetrating the approach TSS for Runways 14L/32R and 6L/24R. The obstruction analysis identified several additional areas with trees forecasted to penetrate the TSS within five years of project implementation. The areas include up to 38 trees found on private properties and up to three trees in public rights-of-way in the approaches to Runways 14L/32R and 6L/24R. While some of these trees will need to be trimmed or removed for the no-action alternative, there is an increase in the number of projected tree obstructions with the preferred alternative. The projected removals also include approximately 32 trees within a city park in the Runway 14 approach.

Along with regular growth, the increase in tree penetrations is partially because of the shift of the TSS aligned with the 115-foot shift of Runway 14L/32R to the northwest, which introduces lower elevation limits for trees off the Runway 14L end. However, the preferred alternative also reduces the total area of the TSS that must be kept clear due to the closure of Runway 14R/32L. Any removals will be carefully targeted to individual trees and will not involve clear-cutting stands of trees. Identification of specific trees to be removed or trimmed will be determined during the detailed project design phase.

Although targeted tree removal is expected to occur off-Airport, such removal is not expected to result in adverse impacts to special status species, or loss, degradation, or fragmentation of native species' habitats. Off-Airport tree removal will not target stands or large groupings of trees that would significantly disrupt habitats. In addition, the environment around the off-Airport tree removals is already fully urbanized and developed.

Current vegetation management practices at the Airport include mowing the areas within the perimeter fence on a regular basis. Areas disturbed during construction will be seeded with a variety of turf grasses. Vegetation management post-construction will

continue with regular mowing, which serves to minimize wildlife hazards while also minimizing the introduction and establishment of invasive species. Introduction and spread of invasive species at the Airport will also be minimized prior to, during, and after construction of the proposed project through a variety of BMPs.

Based on the information above, there are no significant impacts to biological resources associated with the proposed action or no action alternative.

Climate:

The proposed action will result in temporary increases in direct on-site CO₂e emissions attributable to construction equipment. Total construction CO₂e emissions are estimated at 2,483 tons over a two-year period. On-site operational CO₂e emissions attributable to aircraft operations are expected to increase by 44.64 tons per year from 698.38 tons in 2017 to 743.02 tons in 2025 under the no-action alternative, and by 59.42 tons to 757.80 tons per year in 2025 under the preferred alternative. The potential for the preferred alternative to affect future climate conditions is very limited when considering the amount of CO₂e emissions attributable to other sources in Minnesota and throughout the United States.

Considering these factors, neither the no-action nor proposed action will have a significant impact on climate change.

Department of Transportation Act, Section 4(f)

The no-action alternative will involve tree removal or trimming in areas surrounding the Airport, including Edgewood Park. Several cottonwood trees are projected to become obstructions to the TSS because of the faster than average growth rate and taller than average maximum heights of this species.

One element of the proposed project at MIC is shifting primary Runway 14/32 northwest by 115 feet. Trees in Edgewood Park are expected to penetrate the proposed Runway 14 approach TSS sooner in the preferred alternative scenario than in the no-action alternative. Several trees within the park will need to be removed for the preferred alternative; however, the same trees are likely to penetrate the existing TSS at a later date under the no-action alternative. The clearance of the proposed TSS above the ground in the park varies from approximately 82 feet closest to 63rd Avenue North, to approximately 115 feet on the northwest side. The existing TSS is approximately six feet higher than the proposed TSS because the origin of the TSS will shift to the northwest approximately 115 feet with the Runway 14 landing threshold.

The proposed project is also expected to require revisions to the Airport's zoning ordinance. Based on the forecast safety zones associated with the proposed project, the entirety of Edgewood Park will be within Safety Zone A following project completion,

whereas only the portion of the park south of the playground is currently in Safety Zone A. The park is projected to remain outside of the 65 DNL and 60 DNL noise contours.

A certified arborist from Mead & Hunt, Inc. assessed the species, health, and maturity of trees in Edgewood Park during a field survey on October 3, 2018. The proposed action will require removal of approximately 32 trees in the southern portion of Edgewood Park, as these trees are expected to become penetrations to the approach TSS for the proposed relocated Runway 14 end. None of these trees currently penetrate the proposed Runway 14 approach TSS, but they all currently reach a height less than 10 feet below the TSS. All trees proposed for removal are cottonwoods, which is the only tree species that is expected to cause ongoing approach issues in the park given their taller than average mature height and their distance approximately 2,000 feet from the proposed Runway 14 end. Most of these trees are between 80 and 90 feet tall, with a diameter between 15 and 30 inches. Larger cottonwoods proposed for removal are located further north and west and range from 85 feet tall to a maximum of 97 feet tall, with a diameter between 25 and 50 inches. The shorter cottonwoods proposed for removal are in upland areas with a ground surface elevation of approximately 869 to 870 feet above mean sea level (MSL). The taller cottonwoods are in lower areas between 865 and 868 feet MSL near the wetland area at the center of the wooded portion of the park.

Approximately 70 additional cottonwood trees were identified that currently reach a height between 10 and 20 feet below the TSS. These trees range in height from 83 to 95 feet tall. If in the future these trees were to grow to the average mature height of 100 feet, none of them will penetrate the proposed TSS given their current distance below the surface. Therefore, the potential future obstruction status of these trees is uncertain, and the MAC proposes to monitor the height of these trees following project implementation rather than remove them as part of the proposed action.

Section 4(f) Finding:

Section 4(f) of the U.S. Department of Transportation Act (DOT Act) of 1966 (49 U.S.C. 303) states that FAA cannot approve the use of land from publicly owned parks, recreational areas, wildlife, and waterfowl refuges or public and private historic sites unless the following conditions apply: (1) there is no feasible and prudent alternative to the use of the property; and (2) the action includes all possible planning to minimize harm to the property resulting from use.

Evaluation of the project has determined that the trees in the City of Brooklyn Park's, Edgewood Park is a Section 4(f) resource that would be impacted by all project build alternatives, and the project has unavoidable impacts to the Section 4(f) resource.

The City of Brooklyn Park has agreed to the proposed action contingent that the Airport provide mitigation in the form of planting lower growing tree species in the park. The preliminary Section 4(f) de minimis finding was placed out for public comment during the draft EA public comment period from April 22, 2019-June 10, 2019. No comments were received on the de minimis finding or Edgewood Park tree impacts.

For the reasons stated above, the FAA found that this impact is considered de minimis and has received concurrence on this Section 4(f) finding from the City of Brooklyn Park and the Department of Interior. More information can be obtained on this Section 4(f) finding in Chapter 4 of the FEA and Appendix D.

Hazardous Materials, Solid Waste, and Pollution Prevention:

Thunderbird Aviation fueling facilities are located next to the proposed apron expansion. Design and construction of the apron expansion will carefully consider its location to avoid any potential disturbance to these facilities. Other tank sites on Airport property will not be disturbed by the proposed action.

There is an active fuel leak documented by the MPCA (Site 109122) as affecting groundwater directly across 63rd Avenue North from the proposed non-aeronautical development area. Flow of the surface water in this area enters airport property via Twin Creek to the east of the proposed non-aeronautical development area. The depth to the water table in this area is less than 10 feet below the ground surface, which means that water table aquifers are likely to be sensitive to ground-level contaminants. According to the Geologic Atlas of Hennepin County, quaternary groundwater in this area flows generally to the east, and any contamination originating north of 63rd Avenue most likely flows away from the proposed development area. If soil contamination is discovered during construction, construction activities will be immediately discontinued until remediation occurs.

The proposed action will not generate hazardous waste. The proposed action will produce construction debris such as dirt, concrete, and asphalt. Construction materials and other solid waste will be disposed of at a commercial landfill capable of handling disposal as required by Minnesota rules. Local disposal facilities are expected to have capacity to accept solid waste volumes that will be produced by construction and operation of the proposed action. Recycling of asphalt and fill material will be considered during project design, as practicable.

Based on the information above, there are no hazardous materials or solid waste impacts expected for either the preferred alternative or the no-action alternative.

Historical, Architectural, Archeological and Cultural Resources:

There are no impacts to historical/architectural or archeological resources associated with either the no-action or preferred alternative. The FAA determined that a Section

106 finding of *No Historic Properties Affected* was applicable for the proposed action and submitted this finding to the Minnesota State Historic Preservation Office (SHPO) in a letter dated May 17, 2018. The SHPO concurred with the FAA finding that there are no architectural or historic properties eligible for NRHP in the project area in a letter dated June 18, 2018. In a letter to the SHPO dated June 21, 2018, the FAA reaffirmed their finding of *No Historic Properties Affected* based upon a finding of the Phase I archeological survey. The SHPO concurred with the FAA finding in a letter dated July 24, 2018.

Land Use:

The proposed action will result in changes in incompatible uses in the RPZs off Airport property. Shifting Runway 14/32 approximately 115 feet to the northwest and designating it as a utility runway will result in relocating the Runway 32 RPZ entirely onto Airport property. The proposed Runway 14 RPZ will contain approximately 280 feet of Douglas Drive, but no residential parcels. Decommissioning Runway 14R/32L and converting it to a parallel taxiway will eliminate its RPZs. In addition, Runway 6R/24L will be shortened as part of the proposed action, which will result in the elimination of its RPZ conflicts with Bottineau Boulevard and Lakeland Avenue. However, the timing of the proposed project will result in the RPZ temporarily including a portion of the existing apron containing three aircraft tie-downs until the apron is expanded and aircraft parking is relocated outside of the RPZ. The proposed project will remove three residential parcels from the RPZs and reduce the length of public roadways within these zones.

The MAC submitted an RPZ Alternatives Analysis to the FAA addressing the portion of Douglas Drive North in the Runway 14 RPZ and the aircraft tie-downs on the apron in the Runway 6R RPZ. In a letter dated May 8, 2018, the FAA concurred with the findings and approved these uses in the ultimate RPZs. This concurrence is subject to the MAC working with the City of Brooklyn Park to consider installation of “Low Flying Aircraft/No Parking” signage on Douglas Drive North where it is located within the RPZ.

The proposed action will also result in changes to the number of private properties that fall within the forecast Joint Airport Zoning Board (JAZB) safety zones. Existing zoning is based upon the current location of the runways. The MAC will convene a JAZB comprised of representatives from local jurisdictions affected by the proposed zoning changes. There are currently many privately-owned parcels within these zones, most of which are exempt from JAZB zoning because they are in Established Residential Neighborhoods. The extent of the off-Airport safety zones will be reduced due to decommissioning Runway 14R/32L and shortening 06R/24L, as well as re-categorizing all runways as utility runways, which will result in narrower future zones. However, due to the lengthened and shifted Runway 14L/32R, the zones will include new parcels to the northwest and southeast of the existing zones. The JAZB zoning process will consider public input and may result in a zoning ordinance recommendation to the

MnDOT Office of Aeronautics that deviates from the state's model zoning ordinance and from the forecast safety zones.

There are expected to be fewer privately-owned parcels within the safety zones with the preferred alternative than under the existing ordinance. Under the no-action alternative, approximately 125 privately-owned parcels are in or partially within Safety Zone A and 277 are in or partially within Safety Zone B. Under the preferred alternative, the number of privately-owned parcels within or partially within these zones is expected to be reduced to approximately 143 within forecast Safety Zone A and 204 within forecast Safety Zone B.

The proposed action includes the development of an area on the north side of Airport property for non- aeronautical use. This may require rezoning, a variance, or a conditional use permit from the City of Brooklyn Park to allow non-airport or non-public institutional uses in this area.

The preferred alternative is not expected to generate significant additional vehicle traffic when compared to the no-action alternative. The proposed non-aeronautical development on the north side of the Airport will likely contribute minor additional traffic generation.

Land use impacts associated with the proposed action will not be significant based upon the factors described above. The preferred alternative reduces incompatible uses within the RPZs and JAZB safety zones when compared to the no-action alternative.

Natural Resources and Energy Supply:

The preferred alternative will increase the number runway and taxiway light fixtures from 210 to approximately 285 given the reconfiguration of the runways and taxiways. If the added light units are incandescent, the annual electricity requirements of airfield lighting systems are expected to increase approximately 35 percent to 150,000 kWh per year. However, energy-efficient light-emitting diode (LED) fixtures were recently approved by FAA for all existing and planned airfield lighting systems considered by the preferred alternative. If LED fixtures were installed instead of incandescent fixtures for all airfield lighting systems, the annual electricity needs are expected to decrease approximately 70 percent to 40,000 kWh per year. This difference in electricity consumption will inform consideration of light systems at the time of project design.

Consumption of energy and natural resources during the construction phase of the proposed action will consist mainly of construction machinery fuel and construction materials. This consumption will not exceed locally available supplies, and some construction materials may be recyclable. Efforts will be made during design to identify opportunities for recycling pavements and underlying base material. Estimated quantities of required construction materials include 11,720 tons of bituminous pavement, 9,610 cubic yards of crushed aggregate base course, 3,050 gallons of

bituminous tack coat, and 6,540 linear feet of preassembled silt fence. Other required materials include topsoil, seeding mixtures, fertilizer, soil stabilizer, light fixtures, airfield signs, and painted/reflective pavement markings.

Significant increases in aircraft operations are not expected as a result of the preferred alternative, as the 2035 LTCP operations forecasts between the base case scenario (no-action alternative) and the extended runway scenario (preferred alternative) differ by less than 350 operations in the 20-year planning period.

Operation and maintenance of the proposed improvements are expected to require minor increases in energy demand. No significant increases in aircraft or ground vehicle fuel usage are expected under the preferred alternative. In addition, the minor increases in utility demand for airfield lighting and maintenance equipment under the preferred alternative are not expected to have a negative impact on local energy or natural resource supplies.

Noise and Compatible Land Use:

The preferred alternative future with project conditions year of 2025 was chosen for analysis because it is expected to be five years after project implementation. The No Action (2025) scenario shows the 65 DNL contour still mostly contained on Airport property, except for 12 residential parcels on the south side of the Airport. This scenario affects one more parcel than the Baseline scenario. The 70 and 75 DNL contours are contained on the Airport property.

The Preferred Alternative (2025) scenario shows a reduction in off-Airport noise impacts because of closing Runway 14R/32L. Residential parcels in or partially within the 65 DNL contour are projected to be reduced from an existing condition of eleven to four. The 65 DNL and greater contours are otherwise all contained on Airport property. There are no areas within the 65 DNL contour that will experience an increase of 1.5 dB DNL or more; therefore, there will be no significant noise impacts for the preferred alternative. The 70 and 75 DNL contours are contained on the Airport property.

The FAA requires that structures potentially eligible for sound insulation (within the 65 dB DNL noise contour) be evaluated to determine whether the interior noise levels are high enough to warrant sound insulation. Following the completion of the EA, the MAC will test the four residences located in the 65 DNL contours around MIC in accordance with American Society of the International Association for Testing and Materials standards using a methodology agreed upon by the FAA, MAC, and City of Crystal.

Construction equipment noise would be temporary and would be minimized and mitigated through implementation of appropriate recommended FAA construction practices. The MAC will also include contract provisions requiring construction noise mitigation. As a result, there will be no significant construction noise impacts for the no-action or preferred alternatives.

Socioeconomics, Environmental Justice, & Children's Environmental Health & Safety:

The FAA has not established a significance threshold for socioeconomics, but there are factors to consider when analyzing the context and magnitude of potential impacts. The proposed action is not expected to significantly influence economic activity in the area, nor will it cause any relocation or disruption of the established community. Proposed non-aeronautical development on the north side of the property will increase the City of Brooklyn Park tax base, result in some new economic activity, and generate some traffic in the area. However, these impacts are not significant within the context of the activity already occurring in this fully developed urban area.

For environmental justice, disproportionately high and adverse effect means that the effect is predominantly experienced by a minority or low-income population, or that the impacts on these populations are more severe or greater in magnitude than those suffered by non-minority or non-low-income populations.

In most cases, the significance of environmental justice impacts is dependent on the significance of impacts in other environmental categories that primarily affect environmental justice populations. These categories can include noise, air and water quality, and Section 4(f) impacts, among others.

Expected socioeconomic conditions under both the no-action and preferred alternatives are comparable to baseline conditions. Resource categories do not have off-Airport impacts in most cases. Off-Airport residential parcels affected by noise are not located in areas with high proportions of minority or low-income populations.

Up to 49 trees located on private properties and public rights-of-way, and up to 32 trees within Edgewood Park, will need to be trimmed or removed for the preferred alternative. The 32 trees within Edgewood Park are in the Runway 14 approach and within a census block group with 76 percent minorities. Because removal of these trees will not substantially change the wooded character of the park and the MAC will replace them with other shorter and more suitable species for the park environment, tree removal in the park will not have a disproportionately high and adverse impact to environmental justice populations.

Of the 49 trees located on private properties and public rights-of-way, twenty-three are in the Runway 14 approach and within a census block group with 76 percent minorities. Four trees are in the Runway 32 approach and within a census block group with 50 percent minorities. Four trees are in the Runway 6L approach and within a census block group with 34 percent minorities, and eighteen trees are in the Runway 24R approach and within a census block group with 68 percent minorities.

Because tree removal on private properties will be carefully targeted to individual trees, the MAC will compensate homeowners for tree removal on private properties, and

suitable low-growing species will be planted in their place, tree removal on these properties will not have a disproportionately high and adverse impact to environmental justice populations. No significant off-Airport impacts associated with the preferred alternative affect environmental justice populations.

For children's health and safety, expected socioeconomic conditions under both the no-action and preferred alternatives are comparable to baseline conditions, and most resource categories do not have off-Airport impacts. Off-Airport parcels affected by noise do not include schools or playgrounds, or facilities that would otherwise be primarily accessed by children.

Under the preferred alternative, there are no significant impacts to air quality or water resources that may influence the health of the surrounding population, including children. There are no disproportionate safety risks associated with the project, which will occur entirely on fenced Airport property. While there is a larger than average proportion of children near the ultimate Runway 14 end, impacts in other resource categories in this area are not significant. No disproportionate health or safety risks to children are expected. Socioeconomic, environmental justice, and children's environmental health impacts will not be significant.

Visual Effects:

The proposed action will result in changes to airfield lighting due to the relocation and extension of Runway 14L/32R and the associated parallel taxiway. The proposed action will extend existing MIRL systems along the edges of the relocated and extended runway pavement. New taxiway edge lighting will be installed on the parallel taxiway and associated connections to the primary runway. The proposed action will shift the REILs along with the Runway 14L/32R extension; however, the REILs will be located adjacent to the displaced thresholds and therefore will be near their existing locations. The VASI on Runway 32R end will be replaced with a PAPI.

The new distance from the Runway 14L end to the property boundary will be approximately 1,100 feet, compared to a current distance of approximately 1,400 feet. The neighboring use of the property is residential, and most residences have little visual screening. When the tower is closed, the MIRL, PAPI/VASI, and REIL can be remotely activated by pilots via radio, so these systems need only be in full effect when in use by approaching and departing aircraft, which only occurs during low visibility conditions or at night. The LTCP operations forecast and noise analysis estimated approximately five percent of operations occurred at night in the base year 2017, or fewer than 10 operations per night. Options for improving visual screening include constructing berms along the property boundary near the affected properties or using solid fencing in some areas. Methods for visual screening will be considered during project design for the residential properties near the new runway end points.

New airport lighting systems will be similar in type and location to the existing airport lighting systems and will only be in full effect when in use by approaching and departing aircraft. Based on the information above, there are no significant visual effects associated with the preferred alternative or no-action alternative.

Water Resources (including wetlands, floodplains, surface waters, groundwater, and wild and scenic rivers):

The proposed action will add approximately 274,070 square feet (6.3 acres) of impervious surface associated with the runway, taxiways, run-up pads, perimeter roads, and aircraft parking apron. However, approximately 219,850 square feet (5.1 acres) of existing impervious surface will also be removed, for a net increase of approximately 54,220 square feet (1.2 acres) of impervious surface as compared with the no-action alternative (approximately 73.3 acres of total impervious surfaces under the no-action alternative as opposed to approximately 74.5 acres of total impervious surfaces under the preferred alternative).

MAC's contractor will implement BMPs for stormwater management and sediment control during construction. A SWPPP will specify the temporary and permanent erosion control measures, in compliance with local, state, and federal regulations. Construction activities will be designed in a manner that minimizes overall soil disturbance. Sediment control measures will be installed on all down gradient land disturbing activities before beginning construction. Construction practices will take necessary precautions to address stormwater runoff with fuels, oils, bitumen, chemicals, or other harmful materials, and to reduce air pollution from particulate and gaseous matter. A variety of erosion prevention and sediment control practices may be necessary in order to stabilize slopes and drainage ways, protect inlets to the stormwater conveyance system, limit gully formation, and capture sediment. Several practices can be used as temporary erosion control and sediment control, and to meet MS4 requirements. Temporary sediment control practices may include use of vegetated buffers, silt fences, inlet protection, temporary sediment basins, fiber logs, or erosion control blankets, as appropriate.

The Airport's current SWPPP will be revised to reflect the changes in impervious surface on the airfield and any associated new mitigation practices. To comply with NPDES stormwater permit requirements, the Airport will create a separate construction SWPPP that describes the best management practices to be used during construction to control stormwater runoff. Review by the Shingle Creek Watershed Management Commission (SCWMC) will be required because the project area is larger than five acres. Design will meet SCWMC requirements to mitigate for surface water impacts and to comply with local and state regulations.

For floodplains, the FIRM panels do not indicate any potential flood hazard zones near any proposed airfield improvements. The northeastern corner of the Airport includes a Zone A SFHA; however, this zone is outside the proposed non-aeronautical use area as defined in Chapter 3. Therefore, there are no impacts to floodplains associated with the no-action or preferred alternatives.

Although there are areas on Airport property where water-table aquifers are sensitive to surface contaminants, the lack of wellhead protection areas indicates that these are not a public drinking water supply source. The proposed action is not expected to result in contaminants infiltrating groundwater. Therefore, there are no impacts to groundwater associated with the no-action or preferred alternatives.

Two components of the preferred alternative potentially affect delineated wetlands: (1) the non- aeronautical development area; and (2) the southern perimeter road segment. The non-aeronautical development area contains three small wetlands. Two are located on the east side of the development area, and the other is located west of the Airport access road. The MAC will require developers of this site to comply with any wetland rules and buffer requirements set by the SCWMC and Army Corps of Engineers.

The proposed perimeter road segment on the south side of the Airport will pass between the delineated boundaries of two small wetlands, Wetlands 1 and 2. The delineated wetlands are each approximately 0.03 acres in size. Preliminary estimates of grading limits for the proposed perimeter road segment indicate that fill activities will be required in both wetlands. Because of this impact, additional wetland survey efforts were conducted to determine if a perimeter road alignment exists that would avoid all wetland boundaries and meet FAA offset and safety requirements. The location and size of Wetlands 6 and 7 ruled out options along the western perimeter fence and closer to the south end of the runway because of larger potential fill impacts, noise impacts to residential areas to the west, and proximity to runway safety areas.

Preliminary estimates of the required fill within Wetlands 1 and 2 indicate that the total fill area is likely to be less than 1,000 square feet. According to Minnesota Statute § 103G.2241, Subd. 9(d)(2), if less than 1,000 square feet of Type 1 wetlands are drained or filled in this location (i.e. outside the shoreland wetland protection zone in a less than 50 percent area within the 11-county metropolitan area), a replacement plan is not required. Because the disturbance to the wetlands for the preferred alternative is likely below this *de minimis* threshold, impacts will be minimal, and replacement of these wetlands is not expected to be required. If during detailed design it is determined that more than 1,000 square feet of wetlands will be affected, a replacement plan will be developed and implemented.

In terms of compliance with Section 404 of the Clean Water Act and based on conversations with USACE, the wetland impact is expected to be authorized under the

USACE St. Paul District Transportation Regional General Permit (RGP) as a Category 2 regulated activity. Because the estimated wetland impact is less than 0.1 acre, a Pre-Construction Notification (PCN) to the USACE and compensatory mitigation are not required. Projects that meet the terms and conditions of the Transportation RGP and do not require submittal of a PCN may commence work after the project proponent has carefully confirmed that the activity will be conducted in compliance with all applicable terms and conditions of the RGP.

Proposed non-aeronautical development may generate additional wastewater in the City of Brooklyn Park, but the impacts will not be significant in the context of the municipal wastewater load. None of the aeronautical improvements contemplated by the preferred alternative will contribute to wastewater originating from the Airport.

Based on the information above and the established FAA thresholds of significance under NEPA, there are no significant impacts to water resources associated with the proposed project or no action alternative.

Cumulative Impacts and Cumulative Potential Effects:

Recent and planned actions, when combined with the proposed action at MIC, do not have significant cumulative effects on environmental impact categories in the vicinity of MIC. Many of the past and planned projects near the Airport are related to transportation along the Bottineau Boulevard corridor and could in combination have an impact on the land use adjacent to the Airport. However, the proposed action does not contribute to these impacts.

Impacts of the proposed action when considered with past or future actions do not constitute a significant impact that cannot be mitigated. All future actions will be subject to avoidance and minimization studies and will undergo agency permitting as required. Every effort will be made to avoid or minimize impacts where feasible. No significant cumulative impacts or cumulative potential effects are associated with the proposed action or no action alternative.

VI. Environmental Mitigation and Commitments

MIC has committed to the following required mitigation measures as part of the Proposed Action:

- The Airport will obtain any necessary permits prior to beginning construction.
- The Airport will protect wetlands and waters of the U.S. not directly impacted by the Proposed Action during construction.
- Use of BMPs to avoid additional unnecessary and/or unauthorized impacts to surface waters, aquatic resources, and air quality. Construction will comply with the FAA AC 150/5370-2 (Operational Safety on Airports during construction) and AC 150/5370-10 (Standards for Specifying Construction of Airports).

- The MAC will convene a JAZB to revise the existing Airport Zoning ordinance.
- MAC will work with the City of Brooklyn Park for zoning of the non-aeronautical development area.
- Following the completion of the EA/EAW, the MAC will test the four residences located in the 65 DNL contours around MIC in accordance with ASTM standards using a methodology agreed upon by the FAA, MAC, and City of Crystal.

Updates to the voluntary noise abatement plan will be undertaken and there will also be educational briefings with pilots regarding noise.

- All phases of construction would be performed in accordance with FAA AC 150/5370-10B, Standards for Specifying Construction of Airports.
- In the event that human remains or cultural resources are discovered during construction, all work will cease until MIC notifies the SHPO, local authorities, and the FAA Dakota Minnesota Airports District Office. MIC shall protect the area with carefully placed tarps or construction back fill until cultural resource concerns have been appropriately addressed, and MIC will take action to comply with the National Historic Preservation Act, the Native American Graves Protection and Repatriation Act, and the Archeological Resources Protection Act.
- During construction, in the event that previously unknown contaminants are discovered or if a reportable spill occurs, work shall cease until the Airport notifies appropriate local, state, and Federal agencies.
- If endangered species are sighted during construction, work shall cease in the immediate area of the endangered species and all sightings shall be reported to the USFWS, MNDNR and the FAA.
- To avoid impacts to the NLEB, tree removal will occur between October 1 and April 30. If project impacts to listed species change beyond what is identified in the EA, the Airport will have to inform the FAA Dakota-Minnesota Airport District Office (ADO). The ADO will then reinitiate consultation with the USFWS.

Tree removal will be limited to that specified in project plans. Tree removal limits will be clearly indicated in the field by bright orange flagging/fencing prior to any tree clearing to ensure contractors stay within clearing limits. Tree clearing limitations will be discussed with contractors at the pre-construction meeting to ensure that they understand clearing limits and how they are marked in the field.

- Prior to any construction activity during the nesting season, an MBTA nesting bird survey will be completed. Tree removal will occur outside of nesting months for birds observed in the area during their nesting season.

- During final design, a tree plan will be developed between the Airport and City of Brooklyn Park to identify appropriate lower growing tree species in replacement for the cottownwood trees removed from Edgewood Park.
- Tree removal on private properties will be carefully targeted to individual trees. The MAC will compensate homeowners for tree removal on private properties, and suitable low-growing species will be planted in their place.

VII. Public and Agency Coordination

Public involvement is a vital component of the NEPA process. Public and agency coordination was conducted throughout the NEPA process (Appendix L of the FEA).

The Draft EA/EAW and preliminary Section 4(f) finding was released for agency and public review from April 22, 2019-June 10, 2019. The MAC held a Public Hearing on May 29, 2019. Agency and public comments received during the comment period were considered in the development of the FEA. Responses to all verbal and written comments are provided in Appendix M of the FEA.

VIII. Agency Findings

The FAA conducted an independent review of the factual assumptions contained in the EA and determined the adequacy of the EA and takes responsibility for the document's scope and content. Individuals from the FAA have devoted substantial attention to the EA in order to ensure compliance with NEPA and other environmental requirements. Accordingly, I find that the independent and objective evaluation called for by the CEQ has been provided. The FAA has given this proposal the independent and objective evaluation required by CEQ (40 CFR 1506.5).

After careful and thorough consideration of the facts contained herein, I find that the proposed Federal action is consistent with existing national environmental policies and objectives of Section 101(a) of NEPA and other applicable environmental requirements. The proposed Federal action will not significantly affect the quality of the human environment or include any condition requiring consultation pursuant to section 102(2)(c) of NEPA.

Therefore, under the authority delegated to me by the Administrator of the FAA, I find that the proposed airport improvement projects described in the Proposed Action and evaluated in the EA and addressed in this FONSI/ROD are reasonably supported and approved. I direct that action be taken to carry out the following agency actions:

- Unconditional approval of the Airport Layout Plan for the development listed above in the Proposed Action.
- Issue final airspace determinations for the development listed above.
- Determine eligibility for Federal grant-in-aid funds for eligible items.

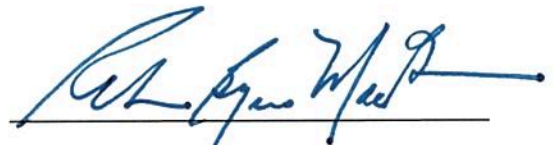
- Finalize determination of potential airspace obstructions to navigable airspace per an aeronautical study outlined under 14CFR Part 77.
- Assist airport sponsor in the modification and/or relocation of FAA Air Traffic Control facilities impacted as a result of this project.

Having met all relevant requirements for environmental considerations and consultation, the proposed action is authorized to be taken when other requirements have been met. These decisions are taken pursuant to 49 USC § 40101, et seq. The FAA findings regarding the proposed airport improvements and any necessary funding, for the Crystal Airport, constitute an order of the Administrator, which is subject to review by the courts of Appeal of the United States, in accordance with the provisions of Section 1006 of the Federal Aviation Act of 1958, as amended, 49 USC § 46110.

Finally, having based upon the administrative review of this project, I certify, as prescribed by 49 USC § 44502(b) that implementation of the Proposed Action is reasonably necessary for use in air commerce.

APPROVED: _____

DISAPPROVED: _____



Rebecca MacPherson
Regional Administrator
FAA Great Lakes Region

DATE: July 31, 2019

Right of Appeal

This FONSI/ROD presents the Federal Aviation Administration's final decision and approvals for the actions identified, including those taken under provisions of 49 USC Subtitle VII, Parts A and B. This decision constitutes a final order of the Administrator 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 USC § 46110.

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Crystal Airport (“Airport”), Federal Aviation Administration (FAA) identifier MIC, is located in Hennepin County, approximately seven miles northwest of downtown Minneapolis. It lies within the cities of Crystal and Brooklyn Park, with a small portion of Airport property within the City of Brooklyn Center. See **Figures 1-1** and **1-2** for graphic depictions of the Airport’s location. The Airport is owned and operated by the Metropolitan Airports Commission (MAC).

Current facilities at MIC include three paved runways and one turf runway as shown in **Figure 1-3**. The main primary runway, 14L/32R, is 3,267 feet long and has paved blast pads on each end that are not considered useable pavement when calculating aircraft takeoff or landing distance requirements. The parallel primary runway, Runway 14R/32L, is 3,266 feet long. Both runways are 75 feet wide. These runways have a full-length parallel taxiway on the southwest side (Taxiway E) with four connector taxiways (Taxiways E1 through E4). The Taxiway E system varies in width between 30 and 40 feet. The paved crosswind runway, 06L/24R, is 2,500 feet long and 75 feet wide. The Runway 06L landing threshold is displaced by 390 feet, and the Runway 24R landing threshold is displaced by 389 feet, to provide a compliant runway safety area and clear obstructions in the approaches to the runway. Runway 06R/24L, the turf crosswind, is 2,123 feet long and approximately 137 feet wide. Runways 06L/24R and 06R/24L have a full-length 30-foot wide parallel taxiway to the southeast (Taxiway A) and connector taxiways on each end (Taxiways D and F). There are four building areas at the Airport on the north, south, east, and west sides. The south building area is home to the fixed base operator (FBO), the administration building, and the Air Traffic Control Tower. Aircraft on the ground and in controlled airspace receive direction from air traffic controllers in the tower to expedite the flow of air traffic and maintain required aircraft separation.

The MAC recently completed a long-term comprehensive plan (LTCP) for the Airport, which the MAC Board approved in October 2017. The LTCP evaluated all aspects of the Airport, including airside and landside facilities. The LTCP concluded Runway 14R/32L should be decommissioned to better match the current and projected activity at the Airport, and that Runway 14L/32R should be extended to a length of 3,750 feet by converting portions of existing blast pads to useable runway. The LTCP also identified undeveloped Airport land suitable for non-aeronautical use and identified the need for a GPS-based non-precision instrument approach procedure for Runway 32.

Federal financial participation in projects listed in the LTCP, through the Airport and Airway Improvement Act of 1982 (AIP), requires environmental review under the National Environmental Policy Act (NEPA). In addition, FAA must approve the Airport Layout Plan (ALP) elements associated with the proposed action evaluated under NEPA. An Environmental Assessment (EA) is a document prepared under NEPA that evaluates the effects of a proposed action on the surrounding natural, social, and economic environments. This EA is prepared under the requirements of the Title V of Public Law 97-248 of the Airport and Airway Improvement Act of 1982, NEPA, and FAA Order 5050.4B, *National Environmental Policy Act Implementing Instructions for Airport Actions* (April 2006). The EA also meets the requirements of FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, dated July 2015.

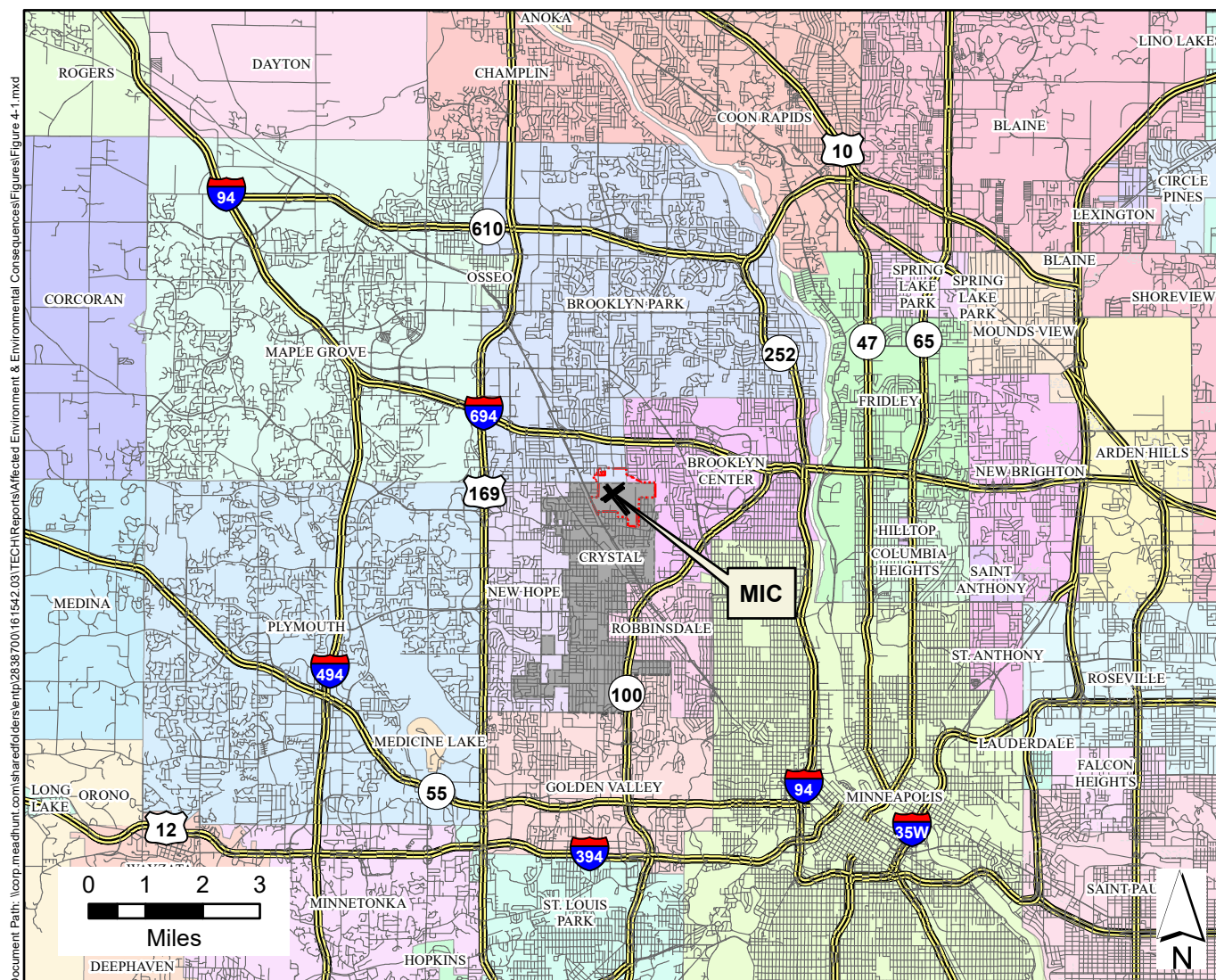
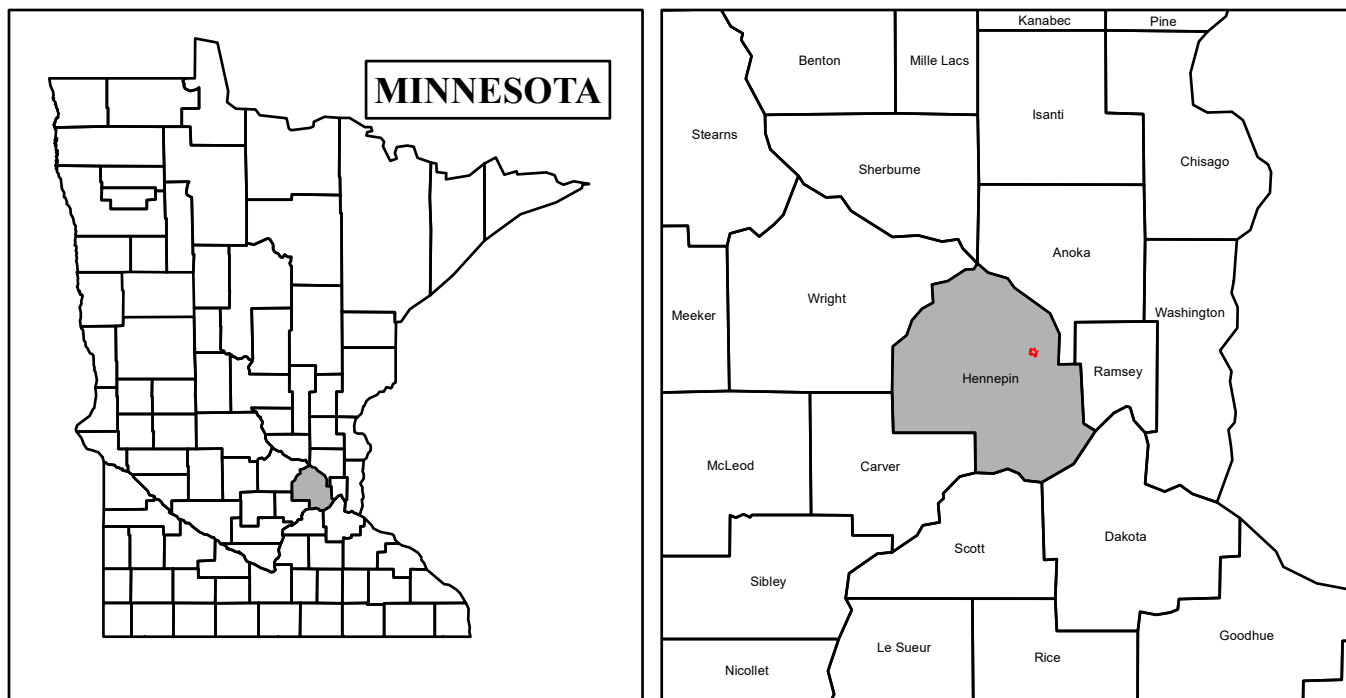
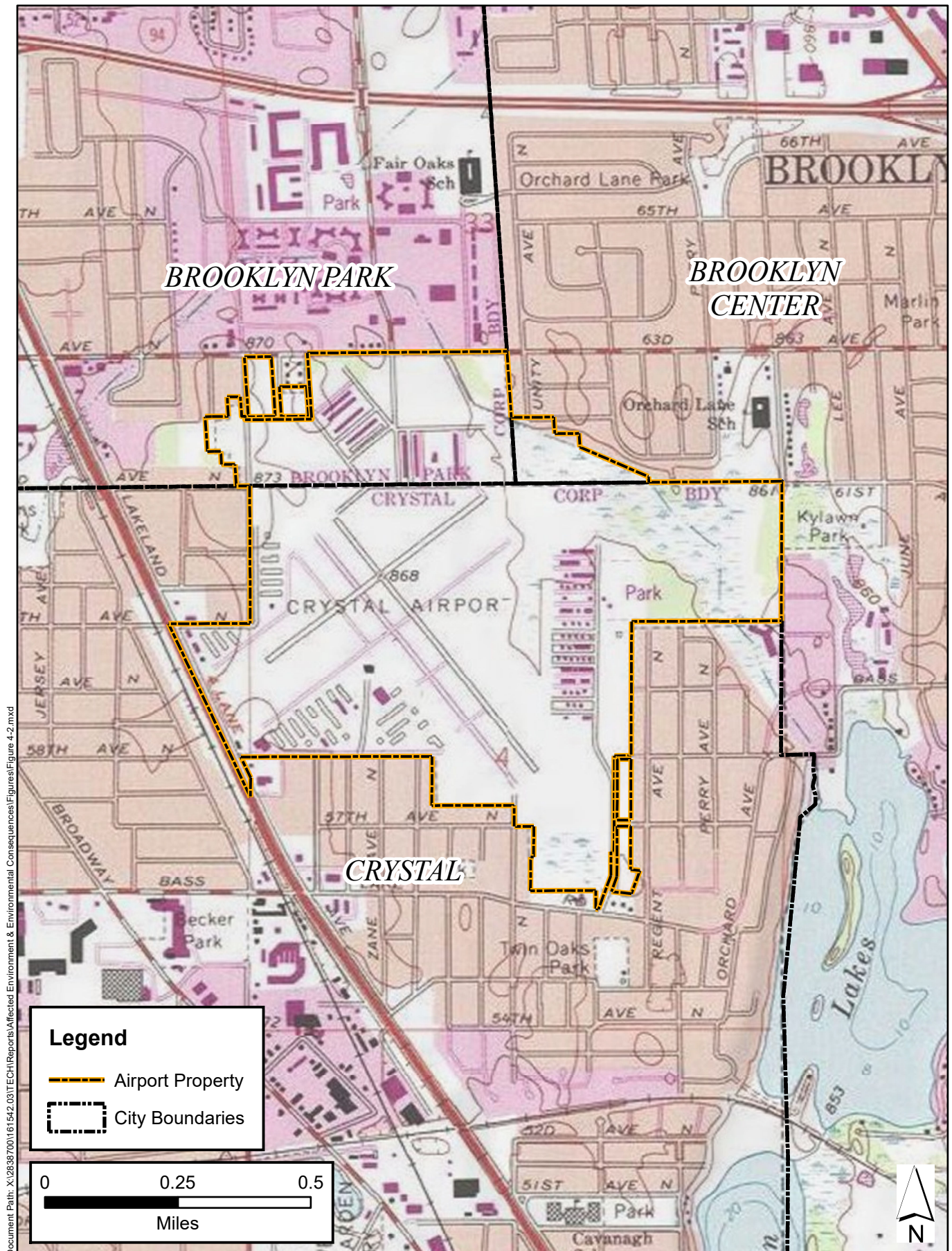
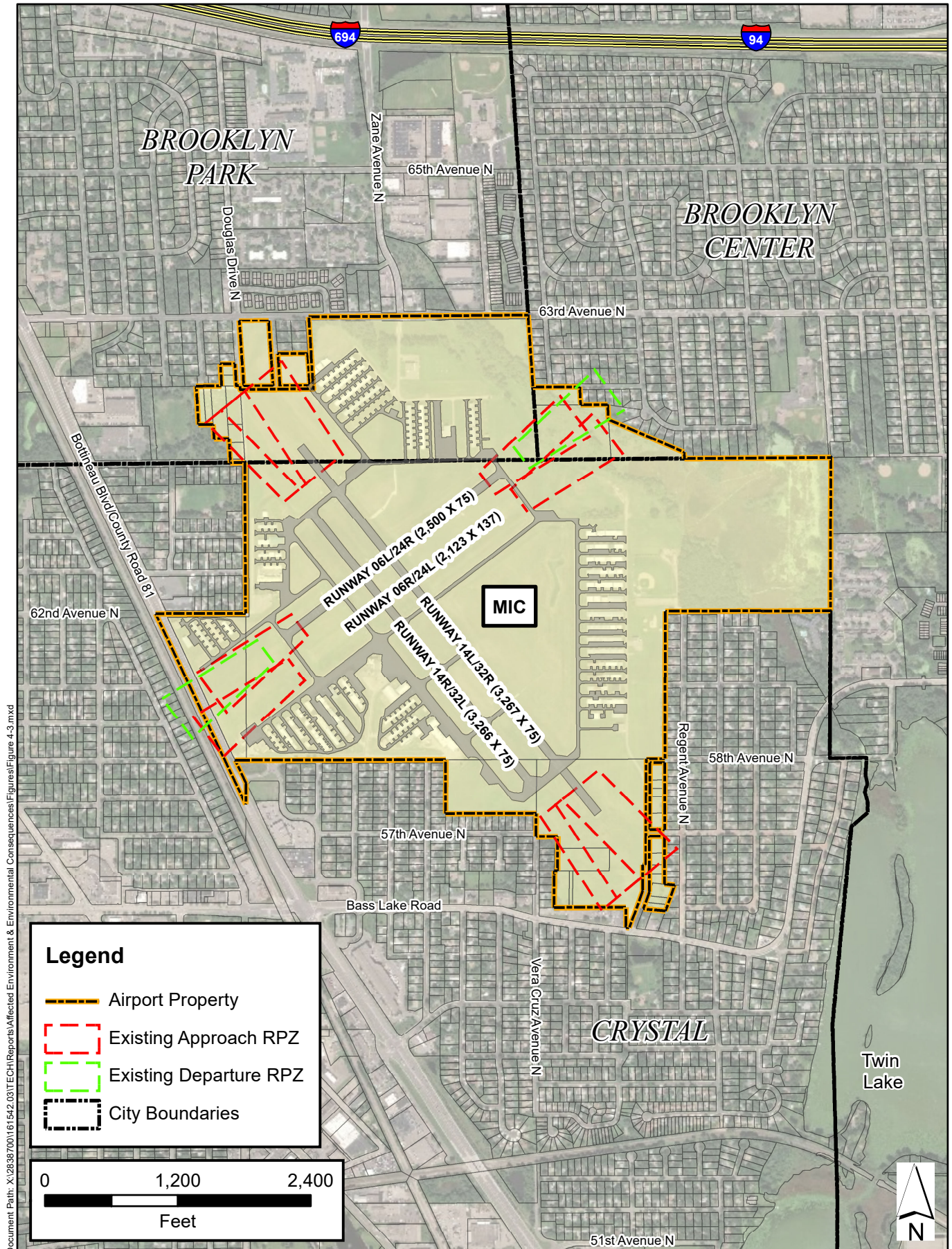


FIGURE 1-1
Airport Location
Crystal Airport
Environmental Assessment



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This EA is also prepared under the Minnesota Environmental Policy Act (MEPA), which requires project proposers to consider environmental effects of its actions. Based on criteria contained in Minnesota Statute 473.614, the MAC must prepare an Environmental Assessment Worksheet (EAW) for projects in the Commission's capital improvement program if they meet all the following conditions:

- A. The project is scheduled in the program for the succeeding calendar period.
- B. The project is scheduled in the program for the expenditure of \$5,000,000 or more at Minneapolis-St. Paul International Airport or \$2,000,000 or more at any other airport.
- C. The project involves the construction of a new or expanded structure for handling passengers, cargo, vehicles, or aircraft; or the construction of a new or the extension of an existing runway or taxiway.

Under Minnesota Rule 4410.1300, the MAC may circulate a federal EA in place of the EAW form, provided the EA addresses each of the environmental effects identified in the EAW form. This EA fulfills the informational requirements of the EAW and contains the Minnesota EAW content, as provided in Minnesota Rule 4410.1200. Informational requirements for each section of the EAW form are cross referenced with appropriate sections of this EA/EAW in Chapter 5.

Because this EA addresses both NEPA and MEPA, the document is hereinafter referred to as the "EA/EAW." The intent of the EA/EAW is to provide the environmental documentation necessary to assist local, state and federal officials in evaluating the proposed action at MIC. The EA/EAW evaluates the proposed action and a full range of alternatives to the proposed action that meet the purpose and need identified in the EA/EAW. The analysis also identifies and discusses measures to avoid, minimize, and mitigate possible environmental impacts.

The EA/EAW is prepared to comply with NEPA and MEPA. The FAA must evaluate the EA/EAW under NEPA and, if the project does not have the potential for significant impacts, issue a Finding of No Significant Impact (FONSI), or prepare a federal Environmental Impact Statement (EIS). The MAC must evaluate the EA/EAW under MEPA and, if the project does not have the potential for significant impacts, issue a Negative Declaration on the Need for an EIS or prepare a Minnesota EIS.

Federal approvals are required before implementing the proposed improvements at MIC. The FAA Airports Division is responsible for the approval of airport plans, administration of airport development grants, and environmental approvals under NEPA. These approval decisions include approval of the Airport Layout Plan that reflects the proposed action and environmental concurrence to support issuance of federal grant-in-aid funds to the MAC for eligible airport development projects. Similarly, several state approvals are required before implementing the proposed improvements at MIC. A list of all federal and state approvals necessary for the proposed project is found in Chapter 4 of this EA/EAW.

2.1 Purpose

The purpose of the proposed action at Crystal Airport (Federal Aviation Administration (FAA) identifier MIC, or “the Airport”) is to address airfield safety concerns through implementation of applicable goals outlined in the 2035 long-term comprehensive plan (LTCP). These goals are:

- 1) Align airfield infrastructure to meet existing and forecasted operations;
- 2) Preserve and improve operational capabilities for critical design aircraft¹; and
- 3) Enhance safety by simplifying the runway and taxiway layout.

The frequency of runway incursions at MIC has caused the FAA to include the Airport in its national initiative known as the runway incursion mitigation (RIM) program. Runway incursions occur when an aircraft, vehicle, or person enters the protected area of an airport designated for aircraft landings and takeoffs. The FAA works with airport sponsors included in the RIM program to identify, prioritize, and develop strategies to mitigate risks at airfields with a history of runway incursions. The proposed action will address future runway incursions, modify airport geometry, and enhance safety while maintaining and improving operations at MIC. The proposed action also includes seeking a land release for non-aeronautical use from the FAA for certain areas of Airport property that are not needed for aeronautical use.

2.2 Need

The need for the proposed action is to create a safer operating environment, address deficiencies identified in the RIM program, and diversify Airport revenue opportunities. The following seven objectives define the proposed action, as discussed in the following subsections:

- 1) Enhance safety by simplifying airfield geometry;
- 2) Provide the required runway length for critical design aircraft² needs;
- 3) Enhance instrument approach capability and mitigate penetrations for both ends of the main primary runway;
- 4) Improve Airport ground vehicle circulation;
- 5) Increase aircraft apron parking capacity;
- 6) Seek a land release for non-aeronautical use for certain Airport property; and
- 7) Keep RPZs on Airport property to the extent practicable.

¹ FAA Advisory Circular 150/5300-13A, Airport Design, defines the term “design aircraft” as “an aircraft with characteristics that determine the application of airport design standards for a specific runway, taxiway, taxilane, apron, or other facility. This aircraft can be a specific aircraft model or a composite of several aircraft using, expected, or intended to use the airport or part of the airport.”

² FAA Advisory Circular 150/5000-17, *Critical Aircraft and Regular Use Determination*, defines the critical design aircraft for runway length as “the single aircraft, or grouping of aircraft with similar operational requirements, that have the longest runway length requirement that makes regular use of the runway.”

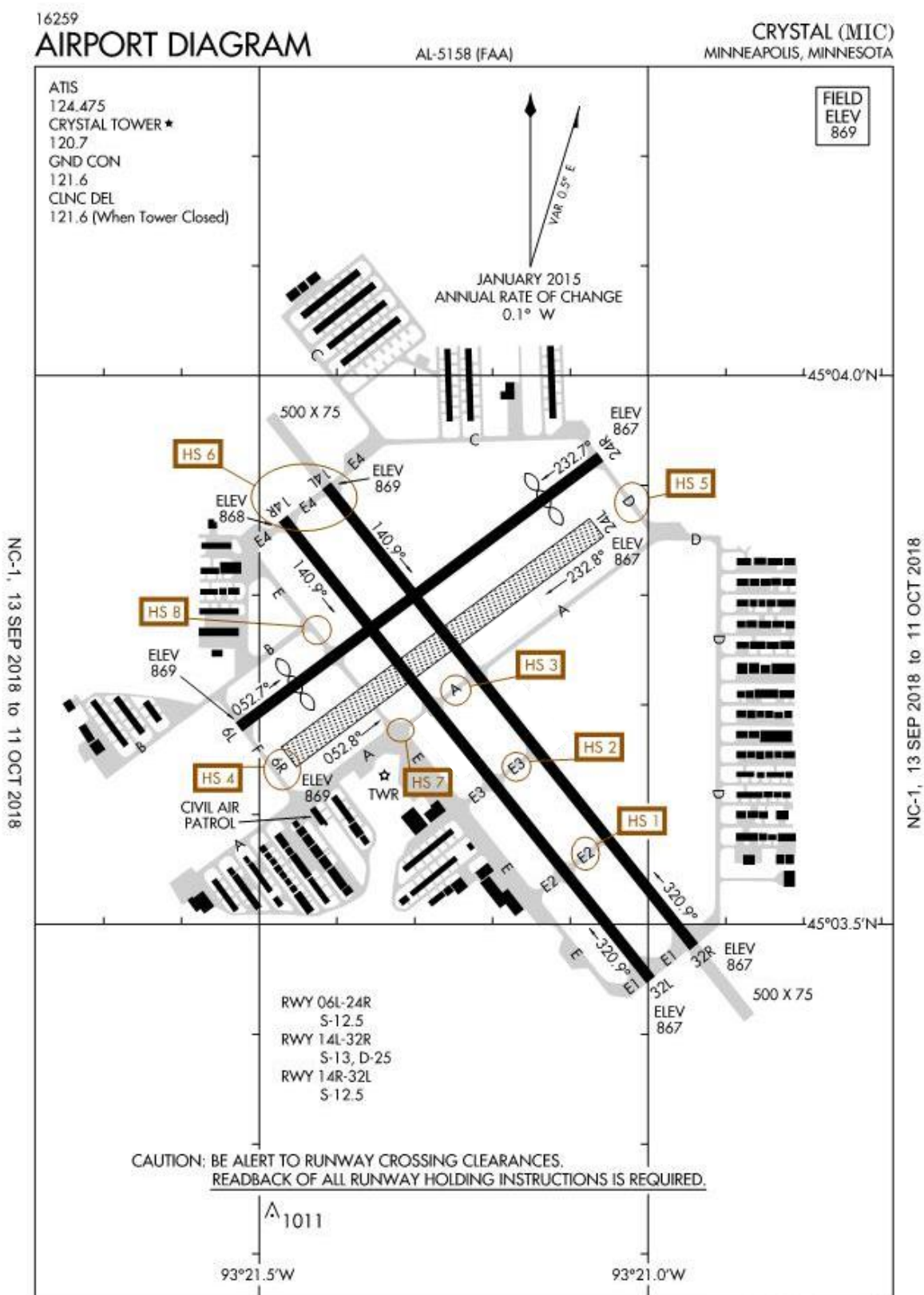
2.2.1 Simplify Airfield Geometry

The existing airfield configuration at MIC is complex and may contribute to pilot confusion and runway incursions. There are currently eight “hot-spots” identified on the FAA Airport Diagram (see **Figure 2-1**). Hot spots are designated locations on an airfield requiring heightened attention by pilots and drivers because of a complex or confusing configuration. These hot-spots are concentrated near complex or closely-spaced intersections of runways or taxiways. One of these hot-spots, HS 6 at Taxiway E4, contributed to the Airport’s inclusion as a study airport under the FAA runway incursion mitigation (RIM) program³. The number of hot-spots on the Airport should be reduced by simplifying the airfield geometry and minimizing the number of runway crossings for aircraft and vehicles. This is consistent with FAA RIM program goals.

Several hot-spots at MIC result from the closely-spaced parallel primary Runways 14L/32R and 14R/32L. Parallel primary runways are typically justified based on operational capacity needs. Based on current and forecast operational demand as established by the recently completed LTCP, there is and will continue to be sufficient operational capacity at the Airport without continuing to use Runway 14R/32L. Therefore, abandoning this runway should be considered. Abandoning Runway 14R/32L would also simplify airfield geometry by minimizing the number of runway crossings on the Airport.

³ The RIM program identifies airport risk factors that might contribute to a runway incursion and develops strategies to help airport sponsors mitigate those risks. Airfield geometry has been identified as a primary contributing factor for runway incursions. After analyzing more than six years of national runway incursion data between 2007 and 2013, the FAA developed a preliminary inventory of locations (initial version released in July 2015) at airports where risk factors might contribute to a runway incursion. The most recent RIM inventory of locations was published in December 2018 based on data collected from 2007-2017. The inventory identifies airport locations where three or more peak annual runway incursions have occurred in a given calendar year or averaged at least one runway incursion per year when the location was added to the inventory. The RIM information is subject to change as the FAA works with the airport sponsors.

Figure 2-1. FAA Crystal Airport Diagram.



Source: FAA Terminal Procedures Publication, Sep 13 2018

2.2.2 Provide Required Runway Length for Critical Design Aircraft Needs

This section establishes the recommended length for each runway at MIC. Runway length at a specific airport is defined based on the performance requirements of its critical design aircraft types. Aircraft performance characteristics vary based on airport elevation, weather and runway surface conditions, flight origin or destination, and desired fuel, passenger, and cargo loads. The “critical aircraft” or “design aircraft” with respect to runway length is defined by FAA Advisory Circular (AC) 150/5000-17, *Critical Aircraft and Regular Use Determination*, as “the single aircraft, or grouping of aircraft with similar operational requirements, that have the longest runway length requirement that makes regular use of the runway.” Runway length requirements at a specific airport are also governed by criteria described in FAA AC 150/5325-4B, *Runway Length Recommendations for Airport Design*.

Table 2-1 summarizes the current designations, types, lengths, widths, surface characteristics, and lighting systems for each runway at MIC.

Table 2-1: MIC Runway Information					
Runway	Type	Length	Width	Surface	Lighting Systems
14L/32R	Main Primary	3,267 feet	75 feet	Asphalt	MIRL, REIL, VASI/PAPI
06L/24R	Main Crosswind	2,500 feet	75 feet	Asphalt	MIRL, VASI
14R/32L	Parallel Primary	3,266 feet	75 feet	Asphalt	None
06R/24L	Parallel Crosswind	2,123 feet	137 feet	Turf	None

Source: 2018 Airport Layout Plan

MIRL: Medium Intensity Runway Edge Lights

REIL: Runway End Identifier Lights

VASI: Visual Approach Slope Indicator

PAPI: Precision Approach Path Indicator

Primary Runway Length

Runway 14L/32R is the main primary runway at MIC, as it is generally aligned with prevailing winds and has superior lighting and approaches when compared with Runway 14R/32L. According to AC 150/5325-4B, Section 103, “the design objective for the main primary runway is to provide a runway length for all airplanes that will regularly use it without causing operational weight restrictions.” Based on the aviation activity forecasts developed for the most recent LTCP, the existing and future critical design aircraft for the Airport are represented by the family of small propeller-driven aircraft with fewer than 10 passenger seats and weighing less than 12,500 pounds. This family of aircraft includes a diverse range of equipment types, from small single-engine piston aircraft used primarily for recreational and personal flying to larger single- and twin-engine turboprop aircraft used predominantly for business.

This document first considered primary runway length needs using FAA guidance provided in AC 150/5325-4B, Chapter 2, for small, propeller-driven aircraft weighing less than 12,500 pounds and with fewer than 10 passenger seats. AC 150/5325-4B divides the fewer than 10 passenger seat category into two fleet subcategories: “95 percent of fleet” and “100 percent of fleet.” The 95 percent of fleet subcategory applies to airports primarily intended to serve medium-sized communities with diverse use and a greater potential for increased aviation activities. Also included in this category are those airports primarily intended to serve low-activity locations, small communities, and remote recreational areas. The 100 percent of fleet subcategory applies to airports primarily intended to serve communities located on the fringe of a metropolitan area or a relatively large population remote from a metropolitan area. Based

on these definitions, the 100 percent of fleet subcategory is most applicable for MIC. AC 150/5325-4B recommends a primary runway length of 3,300 feet for the 95 percent of fleet subcategory and a primary runway length of 3,900 feet for the 100 percent of fleet subcategory. To preserve and improve operational capabilities for the wide range of design aircraft, the Airport should provide a primary runway length that approaches the 100 percent of fleet benchmark while minimizing incompatible land uses in the runway protection zones (RPZs) beyond each runway end and maintaining Airport control over the RPZs.

Although the AC 150/5325-4B method identifies a recommended runway length of 3,900 feet, a 3,750-foot runway length will accommodate user needs in most scenarios while substantially improving safety and operations when compared with the current primary runway length of 3,268 feet. The EA/EAW arrived at the 3,750-foot runway length by applying FAA's guidance, taking into account the natural and built environment in the vicinity of the Airport, to provide runway protection zones (RPZs) clear of incompatible land uses and contained on Airport property, and to maximize the distance between the proposed runway ends and adjacent private properties. In all cases, the pilot is in command of the aircraft and must make the final determination as to whether the pilot may safely operate the aircraft within the available runway length.

Crosswind Runway Length

FAA AC 150/5325-4B, Section 204, states 800 feet is the recommended runway length for small aircraft with approach speeds of 30 knots or more but less than 50 knots at mean sea level. Section 204 also states airports should add eight feet to the recommended runway length for every hundred feet of the airport elevation above mean sea level.⁴ The Section 204 calculations as applied to the turf runway at the Airport result in a recommended runway length of 870 feet at MIC. FAA AC 150/5300-13A further recommends that, for a turf runway, an additional 20 percent length adjustment should be added to account for uneven ground, higher rolling resistance, and less friction on a turf surface. When applied to the recommended length of 870 feet, this results in a recommended length of 1,044 feet for Runway 06R/24L.

Runway 06L/24R is the main crosswind runway at MIC. The runway compensates for small aircraft vulnerability to crosswinds and provides more runway length, a paved surface, and superior lighting when compared with Runway 06R/24L. Runway 06R/24L provides an alternate runway for tailwheel-type aircraft such as the Aviat Husky, Cessna 140, Aeronca Champion, and Piper Cub – 26 of which are based at the Airport – and other users who prefer a turf runway surface. Runway 06R/24L is the only turf runway in the Minneapolis-St. Paul metropolitan area and is an important facility for small aircraft users throughout the region, particularly for “soft field” training. According to MnDOT records, there are fourteen active flight schools in the metropolitan area as of May 2018. Soft field landing is a required part of any initial pilot training (including private, sport, and recreational) according to FAA Practical Test Standards. Although conducting soft field training on an actual turf surface is not required, it is a valuable tool in pilot training. Eliminating Runway 06R/24L may encourage pilots to complete their training outside the metropolitan area. The turf runway, therefore, serves an important role in supporting aviation in the metropolitan area.

⁴ The Airport elevation at MIC is 869 feet above mean sea level.

Runway 06R/24L has taxiways within the runway safety area (RSA) on both runway ends, which results in hot-spots 4 and 5. Shortening Runway 06R/24L is intended to eliminate both hot-spots, as discussed during a special safety meeting held at the Airport with the FAA Runway Safety Action Team (RSAT) members in November 2017. The final hot-spot determination will be made at a future RSAT meeting following implementation of the proposed action.

Shortening Runway 06R/24L to 1,669 feet to reduce the extent of the RSA, with the intent to eliminate hot-spots 4 and 5 as stated above, will also meet the runway length needs of the critical design aircraft.

2.2.3 Enhance Instrument Approach Capability and Mitigate Penetrations

Satellite-based global positioning system (GPS) technology has improved to the point where it provides instrument approach performance comparable to ground-based, on-airport electronic navigational aids without changing geometric Airport design or lighting requirements. The north end of Runway 14L/32R at MIC currently supports a GPS-based instrument approach procedure. However, there are no GPS-based approaches to the south end of this runway. GPS-based instrument approach procedures should be established to both ends of the primary runway. This will allow safer aviation access to the Airport, especially during inclement weather, and will position the Airport to better serve its users in the future.

To maximize the effectiveness of these procedures, the medium intensity runway and taxiway edge lighting (MIRL/MITL) systems will be adjusted and extended for the proposed primary runway length; the visual approach slope indicator (VASI) on the Runway 32 end will be replaced with a precision approach path indicator (PAPI); and the runway end identifier lights (REIL) will be relocated to correspond with the relocated thresholds on both ends of Runway 14L/32R. The REIL systems provide effective identification of the runway end for pilots approaching the Airport; the PAPI system will provide visual approach slope information to help pilots maintain a stabilized approach along the prescribed glide path; and the MIRL and MITL systems outline the edges of the runways and taxiways in periods of darkness or under restricted visibility conditions.

Any on-Airport and off-Airport trees that penetrate the FAA 20:1 approach threshold siting surfaces (TSS) for each runway end should be removed or trimmed, as well as any on-Airport trees that penetrate the FAA 40:1 departure TSS. Removing or trimming these trees may reduce potential visibility and cloud ceiling minimums for the new instrument approach procedures, thereby increasing procedure availability during inclement weather. The proposed action includes publication of non-precision approach procedures with horizontal guidance only and does not propose vertically-guided approach procedures, which would require clearing the FAA 30:1 Vertical Navigation surfaces for each runway end. Vertically-guided approach procedures would increase the number of trees, and potentially other off-Airport objects, that would need to be removed in the runway approaches. The Airport sponsor desires to minimize impacts to the community by reducing the number of trees that must be removed, and therefore does not desire to pursue vertically-guided approaches.

2.2.4 Improve Airport Ground Vehicle Circulation

The Airport does not have a full network of on-Airport service roads servicing the entire perimeter of Airport property. As a result, there is no efficient access for maintenance and service personnel to all areas of the Airport, and ground vehicles (including fuel trucks) must cross active runways to reach hangar areas. This circulation pattern contributes to the likelihood of runway incursions by ground vehicles. Therefore, a network of service roads should be provided to serve the perimeter of the Airport without requiring runway crossings.

2.2.5 Increase Aircraft Parking Capacity

The aircraft parking apron for the Airport's sole fixed base operator (FBO), Thunderbird Aviation, is relatively small, constrained, and operationally inefficient. Parking capacity on the apron is limited to six single-engine or small twin-engine aircraft simultaneously, and fewer if a larger twin-engine piston or turboprop aircraft is parked on the apron. When the apron is full, aircraft must be parked in grassy infield areas or along taxilanes not intended for aircraft parking. The recently completed LTCP indicates that, in 2015, there were 157 aircraft operations on an average day during the peak month (August) at the Airport. A significant share of these operations is conducted by transient aircraft that require a place to park while on the ground, and during peak hours there is inadequate parking and circulation space on the FBO apron. Therefore, an apron expansion should be considered to improve aircraft circulation patterns and increase the number of tie-down locations on the FBO apron.

2.2.6 Seek a Land Release for Non-Aeronautical Use of Certain Airport Property

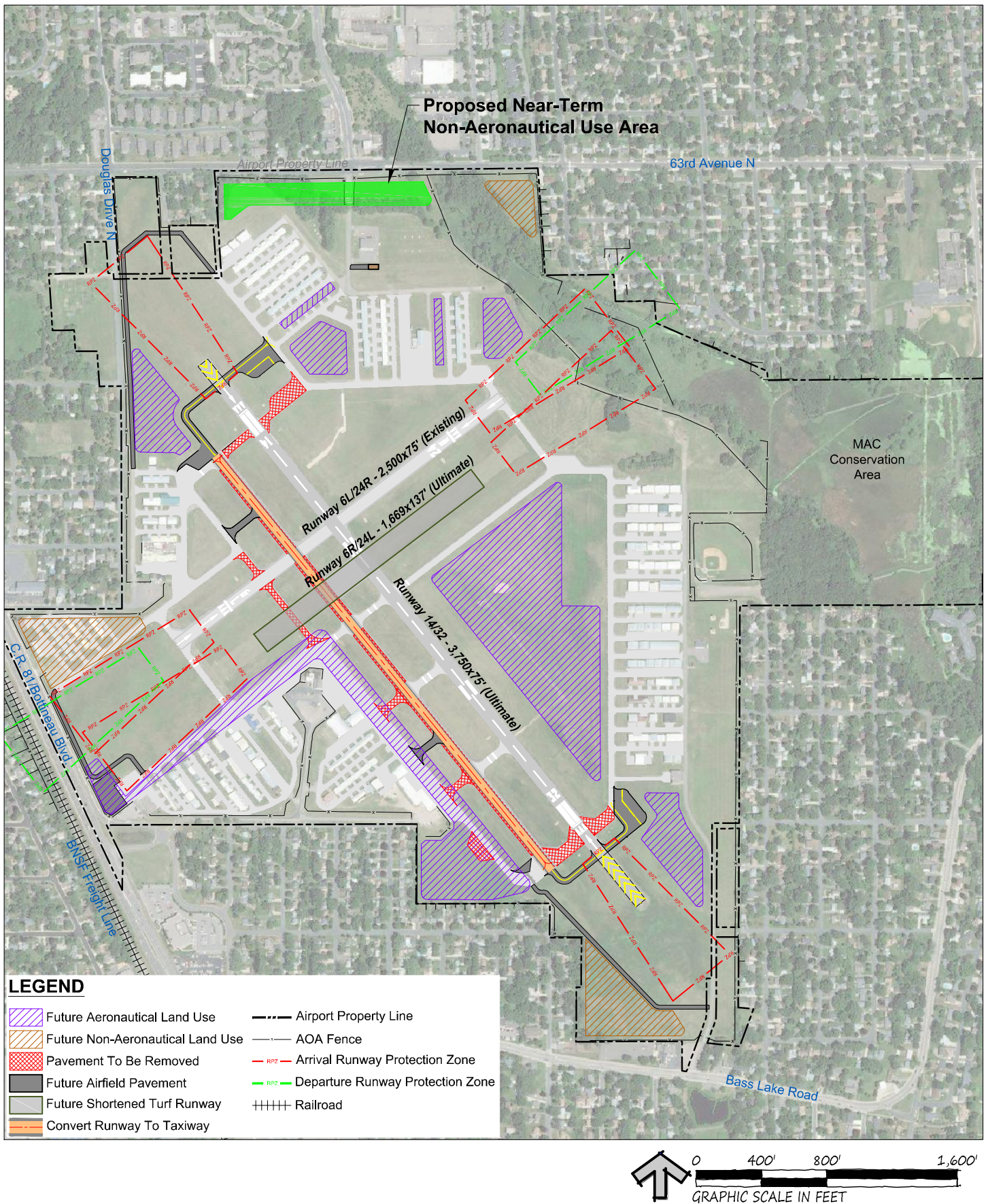
Any property, when described in an agreement with the United States, defined by an airport layout plan or listed in an Exhibit 'A' property map as part of an airport is considered "dedicated" or obligated property for Airport purposes. Federal Airport Improvement Program (AIP) grant assurances require FAA authorization for any proposed revenue-producing non-aeronautical land uses on federally-obligated Airport property, typically in the form of a formal release of land from these obligations. A land release for non-aeronautical use is a formal, written authorization discharging and relinquishing the FAA's right to enforce an airport's contractual obligation to use Airport property for aeronautical purposes. Before authorizing such a release, the FAA must deem that the property in question is no longer needed for aeronautical purposes.

The Airport currently has undeveloped land in areas suitable for non-aeronautical development. The development of non-aeronautical uses would not only benefit MAC by diversifying Airport revenue sources, it would also generate additional tax base for the local municipality in which the parcel lies. Because the FAA requires that property proposed for non-aeronautical use not be needed for present or future aeronautical purposes, it is important to carefully consider foreseeable aeronautical needs before requesting a land release for non-aeronautical development purposes.

The number of based aircraft at the Airport is expected to decline slightly through 2035. It appears only a portion of the available hangar capacity at the Airport will be filled by 2035. However, some of the available hangar stall inventory is currently leased by Airport tenants to support aviation business activities other than aircraft storage. In addition, reasonable enforcement of the MAC's Maintenance Standards Ordinance in the future may result in the removal of some of the existing hangar inventory.

Finally, there could be demand for construction of certain hangar types or sizes that are not currently available. Therefore, in evaluating a land release, the Airport land necessary to accommodate the construction of new hangars should be considered.

Proposed aeronautical and non-aeronautical development areas identified in the LTCP are shown in **Figure 2-2**. The areas identified for future aeronautical development have ample space to accommodate reasonably foreseeable aeronautical development needs associated with existing and future based aircraft. A land release for non-aeronautical use on the north side of the Airport along 63rd Avenue North will not prevent the Airport from meeting aeronautical development needs and should be considered.



This chapter evaluates a range of alternatives and compares the alternatives based on operational and safety factors. The result of the evaluation is the selection of a preferred alternative for further evaluation of environmental impacts. The alternatives are presented and analyzed in the following sections:

- Process for Identifying Alternatives, Section 3.1;
- Range of Alternatives Considered, Section 3.2; and
- Preferred Alternatives / Proposed Action, Section 3.3.

MEPA does not require that an EAW consider alternatives.

3.1 Process for Identifying Alternatives

In 2008, the MAC adopted a 2025 Long Term Comprehensive Plan (LTCP) for Crystal Airport. The 2025 LTCP identified future facility needs for a 20-year planning period between the years 2005 and 2025 and included an analysis of several alternatives. The 2025 LTCP alternatives aimed to better match airfield infrastructure to existing and forecasted activity levels and identified a preferred alternative to achieve this goal. The MAC adopted a new 2035 LTCP in 2017, which identified additional facility needs for a 20-year planning period between the years 2015 and 2035. The 2035 LTCP made several refinements to the 2025 LTCP preferred alternative. The goals of the 2035 LTCP study were the same as those described in Chapter 2 of this EA/EAW.

The MAC held two public information meetings in September 2016 to provide information about the draft 2035 LTCP to interested stakeholders. The initial public comment period on the 2035 LTCP closed on October 26, 2016. In response to community input, the MAC developed a refined preferred alternative. The MAC prepared an Addendum to the draft 2035 LTCP that described the features of the refined preferred alternative and the rationale behind its development. The MAC issued this Addendum for public review and comment on March 15, 2017, and held a supplemental public information meeting on March 30, 2017. The second public comment period closed on April 14, 2017, and the MAC Board formally adopted the 2035 LTCP on October 16, 2017.

The LTCP process is a planning process. It does not involve selection of a project among alternatives, as NEPA and MEPA define those terms, and is not an environmental review process. As a result, when the MAC decided in 2017 to move forward with actions at Crystal Airport, the MAC began an environmental review process under NEPA and MEPA to evaluate and select among alternatives.

3.2 Range of Alternatives Considered

This section summarizes the range of alternatives considered by the 2035 LTCP. FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, states that each alternative considered “must meet basic criteria for any alternative: it must be reasonable, feasible, and achieve the project purpose.” The alternatives are evaluated and compared in terms of their ability to meet the Purpose and Need explained

in Chapter 2. In addition, this section discusses the reasons for eliminating certain alternatives and selecting other alternatives for further study.

The range of alternatives considered by this EA/EAW include the following:

- No-Action Alternative
- Off-Site Alternatives
- 2035 LTCP Alternatives

3.2.1 No-Action Alternative

The no-action alternative represents what would occur if the MAC were to maintain the existing airfield configuration with four runways and make no changes to the existing airport layout. Some tree removal or trimming would be required to keep existing threshold siting surfaces free from obstructions. This alternative would not meet the project purpose and need, as it 1) does not enhance safety by simplifying airfield geometry, 2) does not provide the required primary runway length, 3) does not enhance instrument approach capability, 4) does not improve ground vehicle circulation, 5) does not increase aircraft apron parking capacity, 6) does not seek a land release for non-aeronautical use, and 7) does not keep RPZs on Airport property to the extent practicable. However, as NEPA requires, the no-action alternative is carried forward in this EA/EAW as a baseline for comparison with the other alternatives.

3.2.2 Off-Site Alternatives

Relocate Airport. Finding a new site in the northwest metropolitan area that could accommodate the based and transient general aviation users of Crystal Airport was considered. The site would have to be in an undeveloped area with the ability to control existing and future land use around the site and maintain compatibility with airport operations on the site. Crystal Airport currently comprises approximately 436 acres of land. Development of a new site to replace the Airport's size and function would likely result in substantial impacts to one or more environmental resources such as wetlands, woodlands, surface waters, natural areas, public parks, and existing urban infrastructure. Closing the Airport would mean abandoning substantial public and private investment in the Airport site and burden existing tenants by forcing them to relocate to the new airport. Furthermore, given land acquisition and other costs associated with the construction of a new airport, relocating the Airport is not practicable or feasible. For these reasons, the EA/EAW does not further consider or analyze an airport relocation alternative.

Use Alternate Existing Airports.

MAC also considered using MAC's six other reliever airports rather than making the improvements at Crystal Airport. Crystal Airport is an important part of the MAC's general aviation reliever airports system and serves a vital function in helping MAC fulfill its legislative mandates. The FAA designates Crystal Airport as a "Reliever Airport" for MSP. Federal statutes define a "Reliever Airport" under U.S. Code § 47102 as "an airport the Secretary designates to relieve congestion at a commercial service airport and to provide more general aviation access to the overall community." The FAA further designates Crystal Airport as a Regional General Aviation Airport, which is defined by the 2012 FAA ASSET study as an airport that "supports regional economies by connecting communities to statewide and interstate markets."

The MAC operates Crystal Airport and five other general aviation airports as reliever airports for Minneapolis-St. Paul International Airport (MSP). The six reliever airports in the Twin Cities metropolitan area are St. Paul Downtown (STP), Anoka County-Blaine (ANE), Flying Cloud (FCM), Crystal (MIC), Airlake (LVN), and Lake Elmo (21D). The purpose of these airports is to relieve congestion at MSP by providing infrastructure to accommodate the region's general aviation needs. To preserve capacity at MSP, it is vital that corporate aviation services be provided at the primary relievers (STP, ANE, and FCM). By MAC's definition, the primary reliever airports are those better equipped to serve business jets and corporate aircraft in addition to small GA aircraft. The remaining reliever airports (MIC, LVN, and 21D) complement the primary relievers in the MAC's system by accommodating personal, recreational, and some business aviation users within a specific service area. Crystal Airport is intended for use primarily by small propeller-driven aircraft and provides direct air connection to the northwest suburbs of the Twin Cities. Use of the other reliever airports in lieu of improving Crystal Airport would not address the needs of the MAC's airport system and would detract from each airport's ability to serve its intended purpose within the system.

In addition, use of alternate existing airports in lieu of improving Crystal Airport would not meet the project purpose, because using alternative existing airports would not preserve and improve operational capabilities for the design aircraft¹. For these reasons, using MAC's five other reliever airports in lieu of making the improvements at Crystal Airport is not a reasonable alternative and is not considered further in this EA/EAW.

3.2.3 2035 LTCP Alternatives

This section provides an overview of the alternatives considered by the recent 2035 LTCP. This plan carried forward and reconsidered the Original Preferred Alternative from the 2025 LTCP, which included the following items:

- Decommission existing Runways 14R/32L and 06R/24L (turf).
- Convert existing Runway 14R/32L into a full-length parallel taxiway.
- Preserve area for future hangar development.
- Identify parcels for possible conversion to non-aeronautical use.

Alternatives considered by the 2035 LTCP are summarized below. For the remainder of this EA/EAW document, Runway 14L/32R is referred to as Runway 14/32 to reflect its ultimate designation following decommissioning of Runway 14R/32L.

Turf Runway Alternatives

Runway 06R/24L is the only turf runway in the Minneapolis-St. Paul metropolitan area and preservation of this runway emerged as a priority of Airport users during the 2035 LTCP process. Therefore, two options for preserving a turf landing area were considered by the 2035 LTCP. Length requirements for the turf runway are discussed in more detail in Section 2.2.2.

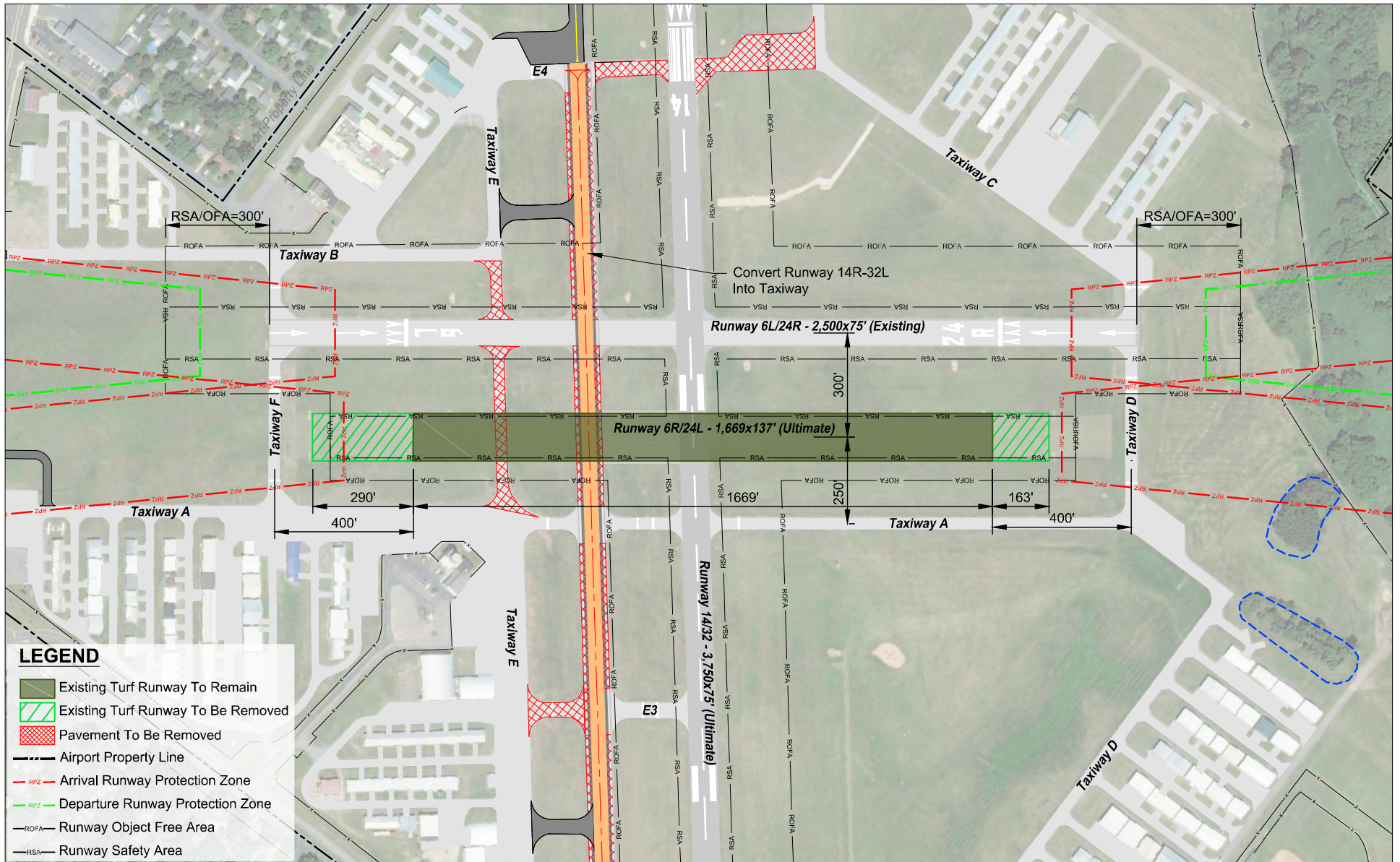
¹ FAA Advisory Circular 150/5300-13A, *Airport Design*, defines the term "design aircraft" as "an aircraft with characteristics that determine the application of airport design standards for a specific runway, taxiway, taxilane, apron, or other facility. This aircraft can be a specific aircraft model or a composite of several aircraft using, expected, or intended to use the airport or part of the airport."

Turf Runway Alternative A: Retain Runway 06R/24L (turf) and Reduce Length to 1,669 feet (Preferred)

Turf Runway Alternative A in the 2035 LTCP considered preserving turf operations by maintaining turf crosswind Runway 06R/24L. Under this alternative, the runway length would be reduced to 1,669 feet so that Taxiways D and F would no longer conflict with the runway safety area (RSA), runway object free area (ROFA), runway object free zone (ROFZ), or approach surface. This would enhance safety and reduce areas with the greatest potential for pilot confusion. Based on discussion with based tailwheel-type aircraft operators during the recent 2035 LTCP process and an analysis of the needs of these types of aircraft based at Crystal Airport, this reduced length meets existing user needs. This alternative is depicted in **Figure 3-1**. Under this alternative, each end of Runway 06R/24L would be accessed via back-taxi from the proposed Runway 14/32 parallel taxiway (decommissioned Runway 14R/32L).

This alternative would include converting the existing “mandatory” runway hold short locations at crossing Taxiways D and F to “holding positions for runway approach area” locations (“approach holds”). This is appropriate as these crossing taxiways will no longer penetrate the RSA, ROFA, or ROFZ. The primary operational benefit of employing “approach holds” is that air traffic control tower (ATCT) controllers will only have to hold an aircraft short of the turf runway at crossing Taxiways D and F when there is an arrival or departure operation on the turf runway. When no operations are occurring on the turf runway, aircraft are not required to hold short of the runway. Given the low volume of operations, the number of times that ATCT controllers must hold an aircraft short of the turf runway will be infrequent. However, when a hold is needed, the appropriate hold short lines and signs will be in place. This is intended to reduce ATCT controller workload, the potential for pilot/vehicle operator confusion, and incursions associated with runway hold short instructions at hot-spots 4 and 5 should these be eliminated by the FAA Runway Safety Action Team (RSAT). The existing hold line locations will remain in place because an aircraft holding at this location would not penetrate the Type 1 threshold siting surface (TSS). A Form 5010 note and permanent Notice to Airmen (NOTAM) will be published stating that the turf runway is closed to operations when the ATCT is closed.

Under this alternative, the distance between the edges of turf Runway 06R/24L and adjacent paved crosswind Runway 06L/24R will remain less than 200 feet. According to FAA Order 7110.65X, *Air Traffic Control*, simultaneous same direction operations are not authorized on these runways due to this non-standard runway edge separation distance. Therefore, aircraft cannot use one runway when the other runway is in use in the same direction. However, the runways will continue to be operated and controlled during ATCT hours when the turf runway is open.



Turf Runway Alternative B: Designated Turf Area Adjacent to Paved Runway

Turf Runway Alternative B in the 2035 LTCP considered decommissioning Runway 06R/24L (turf) and allowing aircraft to land in a designated turf area adjacent to a paved runway, within that runway's operational environment, at the pilot's own risk. This alternative was removed from further consideration by this EA/EAW because it does not comply with current FAA airport design standards intended to promote the safety of aircraft operations, and therefore does not enhance safety at Crystal Airport.

Because it would simplify airfield geometry and meet the runway length needs of existing users, Turf Runway Alternative A is the preferred turf runway alternative for this EA/EAW.

Primary Runway Alternatives

The 2035 LTCP considered several options for lengthening the primary runway to meet the requirements of the critical design aircraft² family. These requirements are discussed in more detail in Section 2.2.2.

Primary Runway Alternative A: Convert Runway 14/32 Blast Pads to Stopway

Primary Runway Alternative A in the 2035 LTCP considered converting the 500-foot paved blast pads at the ends of Runway 14/32 to stopways. Pavement designated as stopway can be considered useable length for decelerating during an aborted takeoff and can therefore be used for accelerate-stop distance calculations. An accelerate-stop distance (ASDA) of nearly 3,800 feet can be provided by converting Runway 14/32 blast pads to stopway, which may allow some aircraft to depart at a higher takeoff weight when ASDA is a limiting factor. This alternative increases ASDA, but not the landing distance available (LDA), takeoff distance available (TODA), or takeoff run available (TORA), and the published runway length of 3,267 feet would not change. This length is lower than the recommended runway length determined during the LTCP process. Therefore, this alternative was removed from further consideration by this EA/EAW because it does not provide the required runway length for critical design aircraft needs.

Primary Runway Alternative B: Convert Runway 14/32 Blast Pads to Runway

Primary Runway Alternative B in the 2035 LTCP considered converting the 500-foot paved blast pads on each end of Runway 14/32 into useable runway. Taxiway extensions would be added to the ends of the existing blast pad pavement for aircraft access. The alternative would result in a 4,267-foot published runway length, which is longer than the recommended runway length determined during the LTCP process. The alternative may attract aircraft types larger than the targeted design aircraft family, specifically those with a maximum certificated takeoff weight greater than 12,500 pounds. Regular use by larger aircraft would change the role of Crystal Airport, which MAC is not seeking to do because of the proximity to Flying Cloud and Anoka County-Blaine Airport, which are both equipped to handle larger aircraft. Therefore, this alternative was removed from further consideration by this EA/EAW because it does not better align airfield infrastructure to match existing and forecasted activity levels.

² FAA Advisory Circular 150/5000-17, *Critical Aircraft and Regular Use Determination*, defines the critical design aircraft for runway length as "the single aircraft, or grouping of aircraft with similar operational requirements, that have the longest runway length requirement that makes regular use of the runway."

As noted in Chapter 2, Section 2.2.2 of this EA/EAW, FAA Advisory Circular 150/5325-4B recommends a primary runway length of 3,900 feet for the 100 percent of fleet subcategory of small propeller-driven aircraft weighing less than 12,500 pounds and with fewer than 10 passenger seats. If Primary Runway Alternative B were scaled back to a 3,900-foot published runway length, it would reduce the likelihood of attracting aircraft types larger than the targeted design aircraft. However, based on the runway length assessment described in Section 2.2.2 and input received at community and stakeholder meetings during the planning process, the Airport sponsor determined that a runway length slightly shorter than the FAA-recommended 3,900 feet would accommodate user needs in most scenarios and provide a substantial safety and operational improvement over the current primary runway length. Disadvantages associated with a 3,900-foot primary runway length at Crystal Airport include increased capital costs to install and maintain additional airfield infrastructure, increased noise contour and light exposure footprints by moving the start of takeoff closer to residential areas, expanded state safety zone footprints, and increased perception from the community that improvements are designed to attract larger aircraft. For these reasons, a 3,900-foot primary runway length was removed from further consideration by this EA/EAW.

Primary Runway Alternative C: Convert Portions of Existing Runway 14/32 Blast Pads to Runway, and Shift Runway Approximately 115 feet to the Northwest (Preferred)

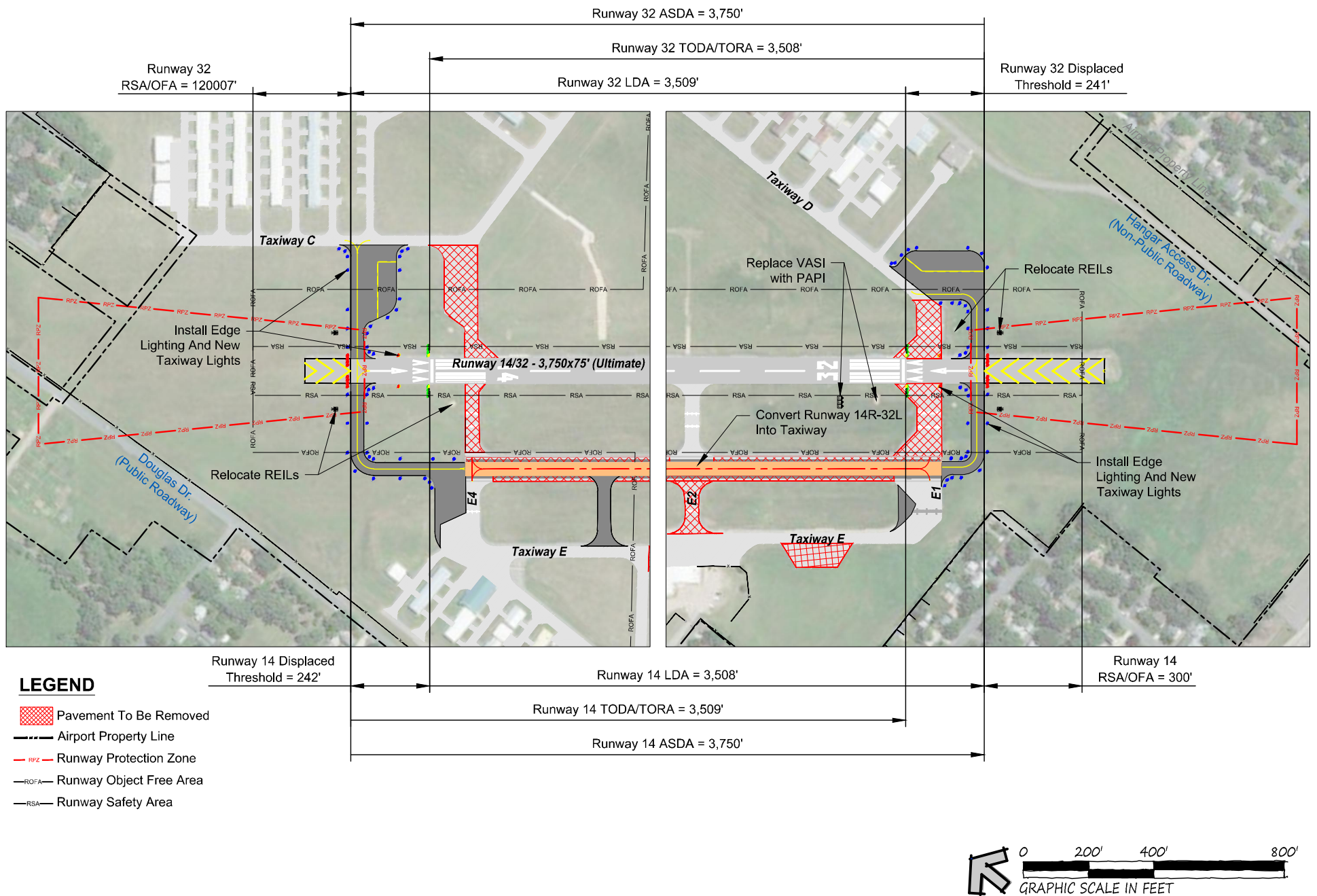
Comments from Airport users and community members led to consideration of this 2035 LCTP alternative. This alternative considers turning only a portion of each blast pad into useable runway, which would result in a published runway length and ASDA of 3,750 feet. The extended runway would be nearly 500 feet longer than the existing runway and would align with the recommended runway length determined during the LTCP process. Because of the constrained nature of the Airport, this alternative uses declared distances³ and displaced thresholds, which means not all the published pavement would be available for landing and takeoff movements in each direction. Ideally, the entire runway length would be available to accommodate all takeoff and landing distance categories. However, for the designated critical design aircraft, ASDA typically emerges as the most critical (longest) length requirement to consider. Thus, the preferred alternative should seek to maximize ASDA. In addition to the increased ASDA, all aircraft users would benefit from having a total of approximately 3,500 feet of useable runway pavement available for takeoff and landing movements, or more than 200 additional feet. With the increase in published runway length (from 3,267 feet to 3,750 feet), the number of additional aircraft operations above the 2017 base case is estimated to be approximately 314 annually by 2035, translating to approximately six additional takeoffs and landings per week. The majority of additional operations are expected to be from turboprop aircraft.

³ Declared Distances are distances for a runway representing the maximum lengths available and suitable for meeting takeoff and landing distance requirements. They are determined in accordance with FAA design standards, with length added to or subtracted from the physical length of the runway to provide standard safety areas and protection zones. As a result, the declared distances for a runway may be more or less than the physical length of the runway depicted on aeronautical charts. There are four defined declared distances: 1) Takeoff run available (TORA) – length for the ground run of a departing aircraft; 2) Takeoff distance available (TODA) – length through the start of the takeoff climb; 3) Accelerate stop distance available (ASDA) – length for acceleration to takeoff speed and then deceleration associated with an aborted takeoff (this is often the longest length for twins and turbines); and 4) Landing distance available – length suitable for landing an aircraft.

The alternative also proposes shifting Runway 14/32 by 115 feet to the northwest along the runway centerline. Shifting the runway northwest would place the runway protection zones (RPZs) fully within MAC-owned property, which would better conform to FAA standards regarding RPZ land use. This alternative meets the project goals and objectives, and better conforms to FAA design standards when compared to other alternatives. For these reasons, this is the preferred primary runway alternative for this EA/EAW. This alternative is depicted in **Figure 3-2**.

Because the Runway 14 landing threshold would be relocated by this alternative, it would require a revision to the Runway 14 instrument approach procedures. This alternative also includes replacing the Runway 32 visual approach slope indicator (VASI) with a precision approach path indicator (PAPI); relocating the runway end identifier lights (REIL) to correspond with the relocated runway ends; and adjusting and extending the medium intensity runway and taxiway edge lighting (MIRL/MITL) systems to correspond with the proposed runway length.

The alternative proposes changing the designation of Runway 14/32 to Utility, which is consistent with the needs of the design aircraft family identified in Chapter 2, *Purpose and Need* (small propeller-driven aircraft with fewer than 10 passenger seats). Utility runways are intended for regular use by aircraft with maximum certificated takeoff weights of 12,500 pounds or less. The projected fleet mix for 2025 anticipates fewer than 10 annual operations by aircraft with maximum certified takeoff weights of more than 12,500 pounds. Changing the existing and planned runway designations would reflect the needs of the Airport's users. It would also reduce the size of the RPZs prescribed by FAA Advisory Circular (AC) 150/5300-13A, *Airport Design*, because the runway would be designed for small aircraft exclusively. Decommissioning Runway 14R/32L and shortening Runway 06R/24L would reduce incompatible land use, but it would not improve RPZ compatibility off the remaining runway ends. Changing the existing and planned designation for Runway 14/32 to Utility and designing the runway for small aircraft exclusively would further reduce the number of residential parcels within the RPZ.



Runway 32 Non-Precision Instrument Approach

The 2035 LTCP proposed establishment of a new, non-precision LNAV (GPS) type instrument approach procedure for Runway 32. The new approach was identified as a potential need because there are no existing instrument approach procedures to the south end of the runway. A new GPS-based approach procedure can be designed and implemented at a relatively low cost because on-airport equipment is not required. Visibility minimums for the new approach would be greater than or equal to one mile.

To maximize the effectiveness of a future Runway 32 procedure, the 2035 LTCP proposed replacing the existing VASI lighting system with a PAPI system. The existing MIRL, MITL, and REIL systems will also need to be adjusted and/or relocated relative to the new Runway 14/32 ends. The REIL systems provide effective identification of the runway end for pilots approaching the Airport; the PAPI systems provide visual approach slope information to help pilots maintain a stabilized approach along the prescribed glide path; and the MIRL and MITL systems outline the edges of the runways and taxiways in periods of darkness or under restricted visibility conditions. A new GPS approach and associated improvements would enhance operational capabilities, position the Airport to better serve its users, and allow safer aviation access to Crystal Airport, especially during inclement weather. It would also meet the project objective to enhance instrument approach capability to both ends of the primary runway.

Taxiway System Alternatives

The 2035 LTCP Preferred Alternative included converting the existing Runway 14R/32L pavement into a full-length 40-foot wide parallel taxiway and altering the taxiway layout to simplify airfield geometry and reduce the number of runway crossings for aircraft and vehicles. In addition, the FAA has issued guidance to avoid designing taxiways that lead directly from an apron to a runway without requiring a turn. Altering the taxiway layout at Crystal Airport would reduce the occurrences of this type of connector taxiway on the airfield.

Taxiway System Alternative A

Taxiway System Alternative A considered:

- Converting Taxiway E into an apron edge taxilane between Taxiways A and E1.
- Removing the section of Taxiway E that crosses Runways 06L/24R and 06R/24L between Taxiway A and Taxiway B, to eliminate two runway crossings where runway incursions may occur.
- Removing the section of Taxiway E3 between Runway 14/32 and the future parallel taxiway, to eliminate direct apron-to-runway access.
- Removing the section of Taxiway E2 between Taxiway E and the future parallel taxiway, to eliminate direct apron-to-runway access.
- Extending Taxiway B between Taxiway E and the future parallel taxiway (existing Runway 14R/32L).

Taxiway System Alternative A1

Based on input received from ATCT and Airport Operations staff during the first LTCP comment period, additional taxiway system alterations were considered to make the airfield more efficient

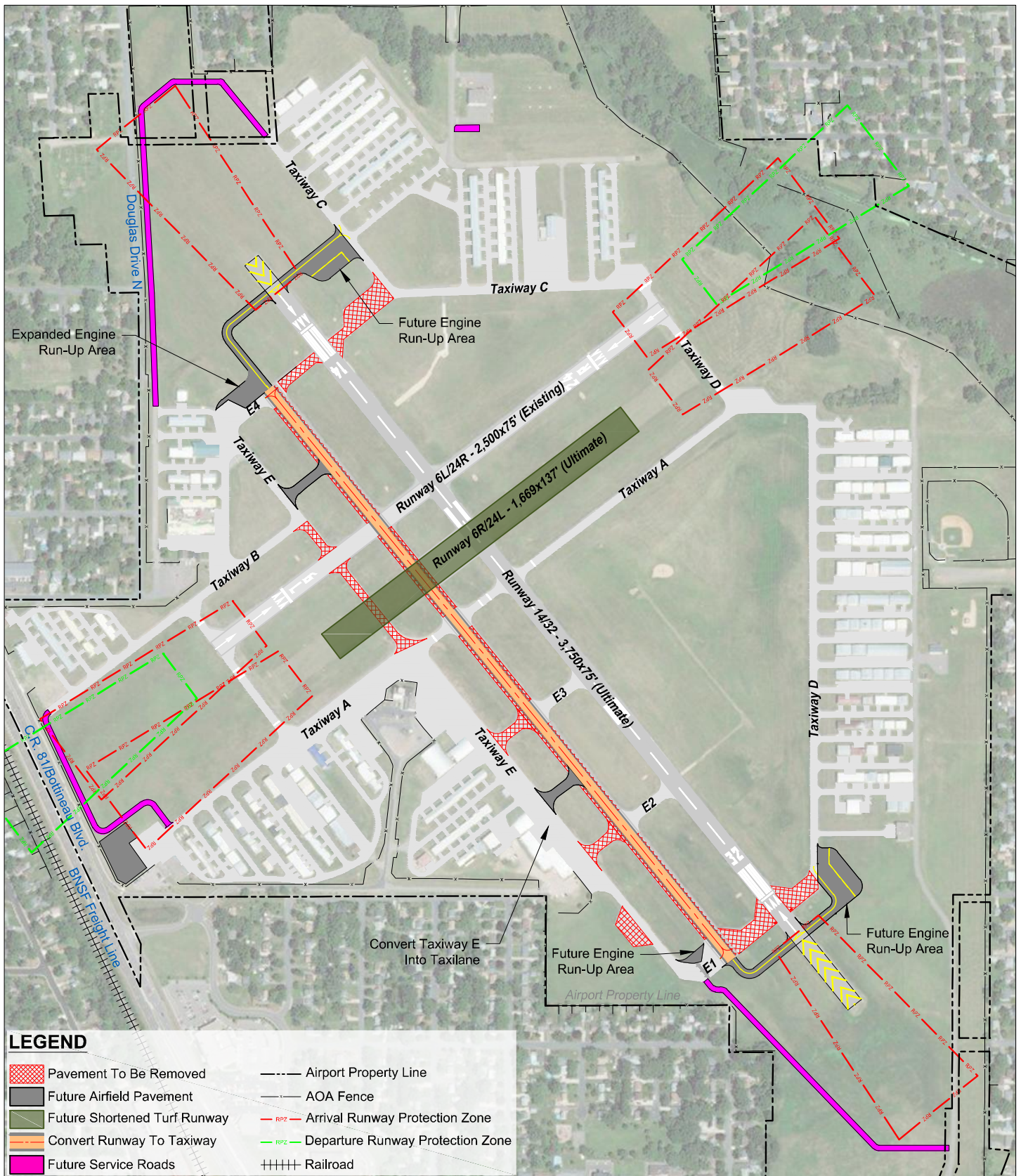
and further simplify geometry. Taxiway System Alternative A1 includes the concepts proposed by Taxiway System Alternative A, as well as:

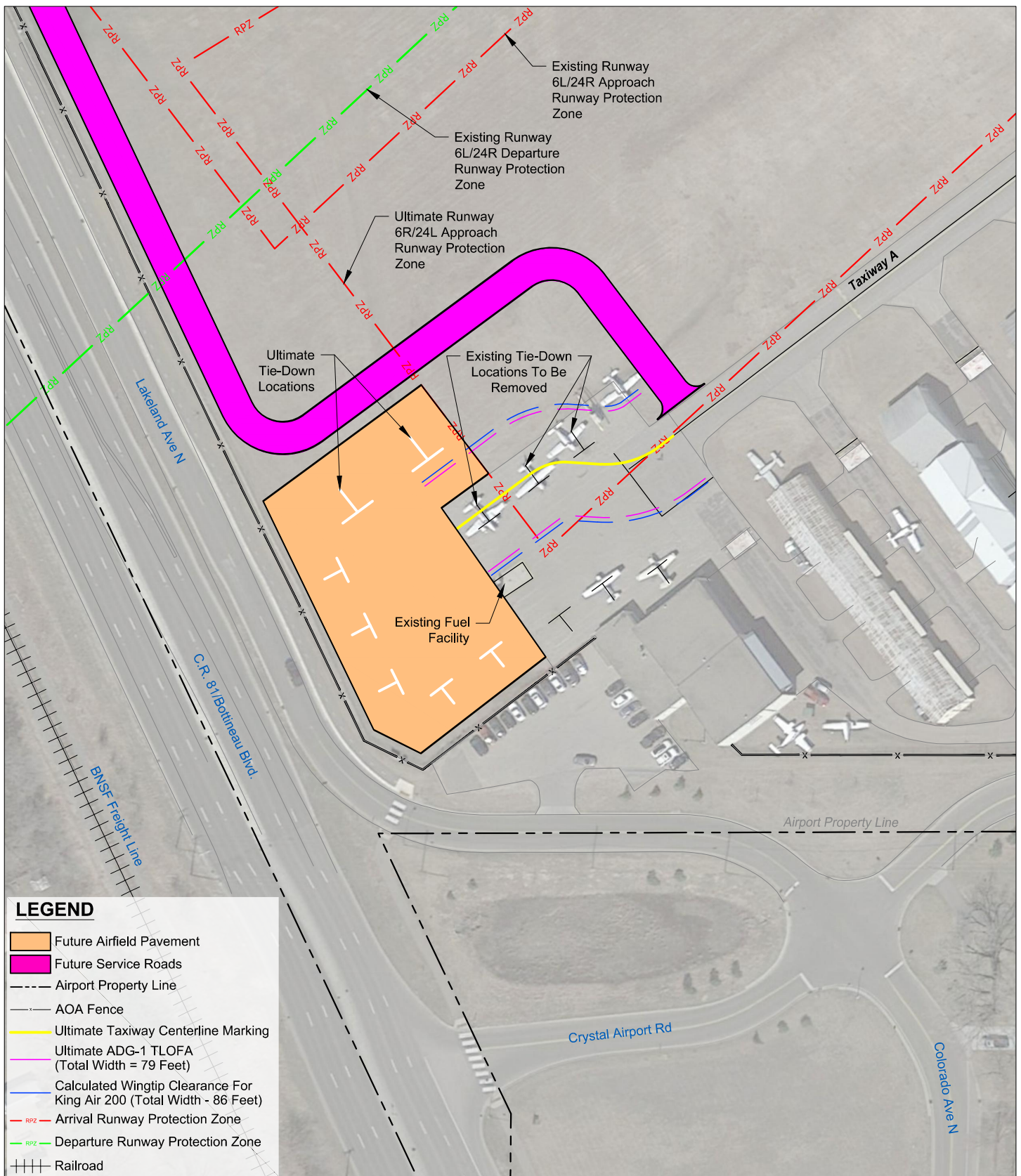
- Removing Taxiways E2 and E3 between Taxiway E and the future parallel taxiway to eliminate direct apron-to-runway access and replacing them with a single new connector located between the removed taxiway sections. Unlike Taxiway System Alternative A, Taxiway E3 between Runway 14/32 and the future parallel taxiway would be retained to improve the efficiency of aircraft exiting the runway after landing.
- Removing existing runway end connectors for Runway 14/32 (Taxiways E1 and E4), and replacing with connectors to the full parallel taxiway at the new runway ends.
- Offsetting the Taxiway B extension between Taxiway E and the future parallel taxiway by approximately 100 feet northwest to provide additional distance before the Runway 06L/24R hold short position.
- Adding new engine run-up pads on either end of Runway 14/32 on its northeast side, adding a new engine run-up pad adjacent to Taxiway E1, and expanding the existing engine run-up pad adjacent to Taxiway E4.

This alternative enhances safety by simplifying the runway and taxiway layout, while eliminating unnecessary runway crossings and direct apron-to-runway taxiway connections. It also conforms to FAA guidelines regarding taxiway design and considers input from Air Traffic Control Tower and Airport Operations staff. For this reason, this is the preferred taxiway system alternative for this EA/EAW. This alternative is depicted in **Figure 3-3**.

FBO Apron Expansion

The 2035 LTCP proposed expanding the FBO apron to improve circulation and increase the number of aircraft tie-downs. In the initial planning stages, a location north of the existing apron was considered for the expansion. This was acceptable when combined with decommissioning the turf crosswind runway; however, with the inclusion of a shortened turf runway in the refined 2035 LTCP preferred alternative, this location would be inside of the Runway 06L/24R RPZ. For this reason, this EA/EAW proposes a location west of the existing apron along the air operations area (AOA) perimeter fence, and outside the future Runway 06L/24R RPZ. This concept is depicted in **Figure 3-4**. This location adds seven tie-down spaces and removes three previous spaces where existing tie-down spaces would be converted to taxilane. This would result in a total of ten available tie-down spaces. This net gain in spaces would improve operational capabilities and better align available aircraft parking with existing and forecasted demand. This would also meet the project objective to increase aircraft parking apron capacity by addressing the occasional shortage of tie-down space for transient aircraft and improving the flow of aircraft traffic to and from the FBO apron.





On-Airport Service Roads

The 2035 LTCP considered additional on-Airport service roads around runway ends so that vehicles, including fuel trucks, do not have to cross active runways to reach hangar areas. This EA/EAW proposes adding Airport service roads in three places: around both the north and south ends of Runway 14/32, and around the west ends of Runways 06R/24L and 06L/24R. These concepts are depicted in **Figure 3-3**. This would lower the potential for runway incursions by reducing the number of runway crossings by ground vehicles, thereby enhancing safety and improving ground vehicle circulation at the Airport.

Land Release for Non-Aeronautical Development

To authorize the release of obligated Airport property for non-aeronautical use, the FAA must deem that the property in question is no longer needed for aeronautical purposes. Crystal Airport has several areas that are not used for aeronautical purposes or planned for Airport use in the long-term. The 2035 LTCP recommended identifying on-Airport parcels that could be opened to non-aeronautical development. The 2035 LTCP identified undeveloped areas along 63rd Avenue North and near Bass Lake Road as potential parcels for non-aeronautical development. Additionally, the hangar area along Lakeland Avenue North was identified as an area of opportunity for non-aeronautical development where relocating existing hangars could address aesthetic concerns about aging structures.

The proposed non-aeronautical development is complementary to aligning the airfield infrastructure to match expected activity levels, as portions of Airport property are not planned for Airport use in the future. The parcels on the north side of the Airport along 63rd Avenue North are the most feasible for non-aeronautical development at this time. This area is currently undeveloped, which means that existing facilities would not need to be relocated prior to development. The northeast corner is unsuitable for Airport development due to a wetland complex surrounding Twin Creek that isolates it from the rest of the property. The proposed non-aeronautical use would be limited to the area west of this wetland complex on both sides of the 63rd Avenue North entrance road. Existing mixed use commercial and residential areas across 63rd Avenue North would be compatible with non-aeronautical development on Airport property. The proposed non-aeronautical use area is in a City of Brooklyn Park Public Institution special zoning district. Rezoning of the property may be necessary for future tenants to obtain building permits from the City.

3.3 Preferred Alternative / Proposed Action

Based on the set of preferred alternatives selected in this chapter, the proposed action evaluated by this EA/EAW includes the following, as shown in **Figure 3-5**:

- Decommission Runway 14R/32L and convert it to a full parallel taxiway for primary Runway 14/32, extended to the new runway ends.
- Convert portions of primary Runway 14/32 blast pads to usable runway for a total published length of 3,750 feet with declared distances and change the runway designation to Utility.
- Shift primary Runway 14/32 approximately 115 feet to the northwest along its centerline.
- Reduce the length of existing Runway 06R/24L (turf) to 1,669 feet to clear Taxiways D and F from its RSAs.
- Revise the existing Runway 14 instrument approach procedure and establish a non-precision GPS-based instrument approach procedure (LNAV) to the Runway 32 end.
- Replace the Runway 32 VASI with a PAPI.
- Relocate the REIL systems to correspond with relocated thresholds on both ends of Runway 14/32.
- Adjust and extend the MIRL and MITL systems to correspond with the proposed primary runway length.
- Improve and simplify the taxiway system, including:
 - Convert Taxiway E into an apron edge taxiway between Taxiways A and E1.
 - Remove the section of Taxiway E that crosses Runways 06L/24R and 06R/24L between Taxiway A and Taxiway B.
 - Remove Taxiways E2 and E3 between Taxiway E and the future parallel taxiway and replace them with a single new connector located between the removed taxiway sections.
 - Add a connector taxiway between Taxiway E and the future parallel taxiway offset from existing Taxiway B by approximately 100 feet to the northwest.
 - Remove existing runway end connector Taxiways E1 and E4 and replace with connectors from the future parallel taxiway to the new Runway 14/32 ends.
 - Add new engine run-up pads on either end of Runway 14/32 on its northeast side, add a new engine run-up pad adjacent to Taxiway E1, and expand the existing engine run-up pad adjacent to Taxiway E4.
- Construct on-Airport perimeter roads around runway ends on the north, west, and south sides of the airfield to allow ground vehicles to circulate without crossing runways.
- Expand the FBO apron to increase available tie-down spaces for aircraft and remove tie-downs from the Runway 06R RPZ.
- Release certain Airport property for non-aeronautical use along 63rd Avenue North, in the area west of the Twin Creek wetland complex and on both sides of the 63rd Avenue North entrance road.

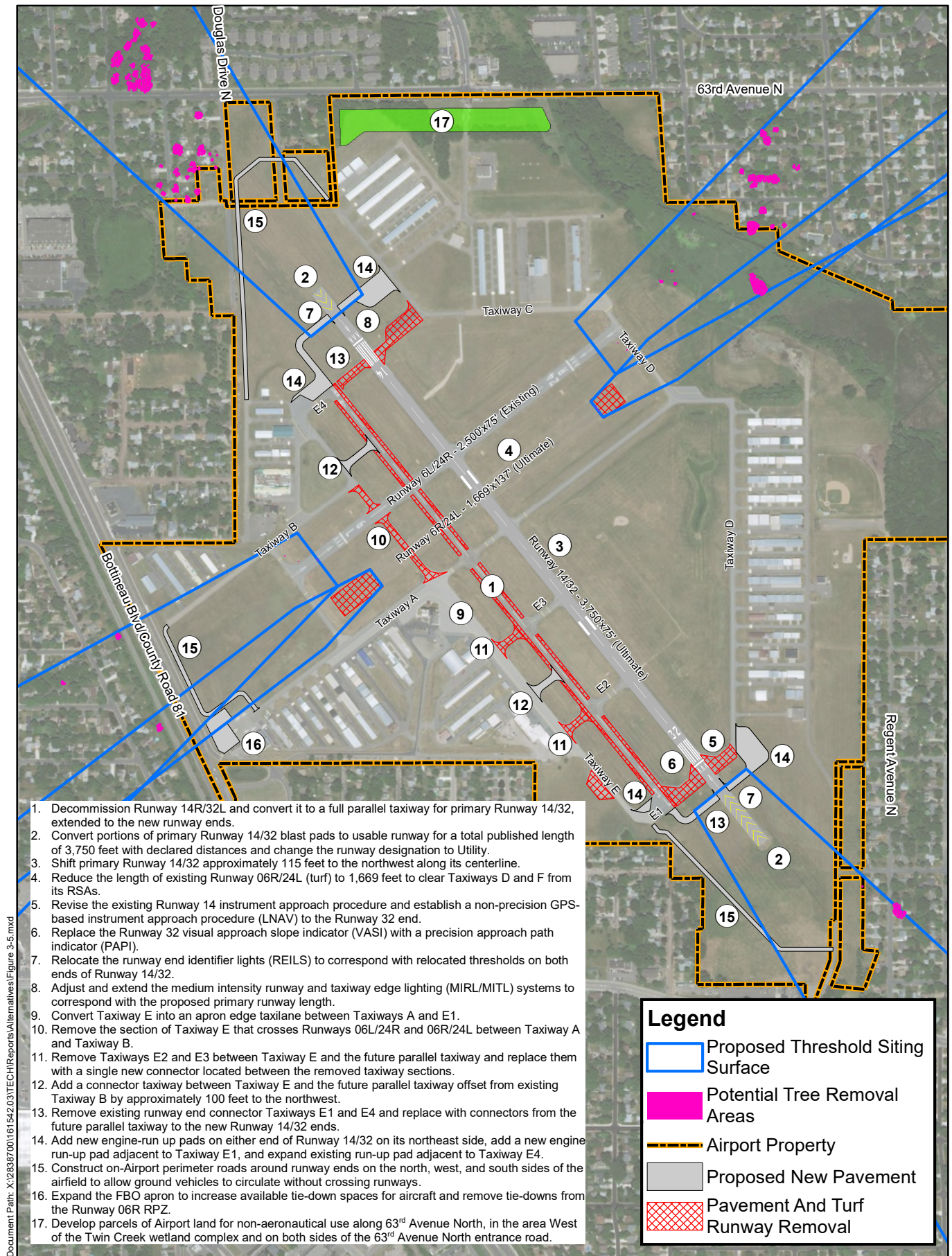


FIGURE 3-5
Preferred Alternative
Crystal Airport
Environmental Assessment

Affected Environment & Environmental Consequences

4.1 Introduction

This chapter provides background information regarding the surrounding community and environment at Crystal Airport and compares the environmental consequences of the preferred alternative to the no-action alternative. The chapter includes appropriate analysis of all environmental impact categories required by FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* implementing NEPA, as well as by Minnesota Environmental Quality Board (EQB) rules implementing MEPA. None of the impacts exceed thresholds of significance as defined by FAA Order 1050.1F. The chapter also identifies required permits and mitigation activities for the preferred alternative. The chapter is organized by environmental impact categories. Resource categories are organized as follows:

- Air Quality
- Biological Resources (including fish, wildlife, and plants)
- Climate Change
- Coastal Resources
- DOT Section 4(f) Lands
- Farmlands
- Hazardous Materials, Solid Waste, and Pollution Prevention
- Historic, Architectural, Archeological, and Cultural Resources
- Land Use
- Natural Resources and Energy Supply
- Noise and Compatible Land Use
- Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety
- Visual Effects
- Water Resources
- Cumulative Impacts and Cumulative Potential Effects

The following sections describe the information included under each resource category. If the resources within the category are not present in the affected environment, their absence is stated, and the following subsections are not included in this EA/EAW document for those resources.

4.1.1 Regulatory Setting

The regulatory setting section under each resource category discusses the requirements for assessing the resource and applicable federal, state, and local laws and regulations.

4.1.2 Affected Environment

The affected environment section under each resource category describes the existing environment in the project area. This information establishes the baseline conditions for each resource category against which to evaluate potential impacts of the proposed action.

4.1.3 Environmental Consequences

The environmental consequences section under each resource category assesses the potential impacts of the no-action and preferred alternatives. Environmental consequences include all direct, indirect, and cumulative impacts, as NEPA and MEPA define those terms, as well as mitigation measures if applicable. This section considers environmental consequences with reference to specific thresholds at which the FAA considers an environmental impact to be significant.

4.1.4 Area of Analysis

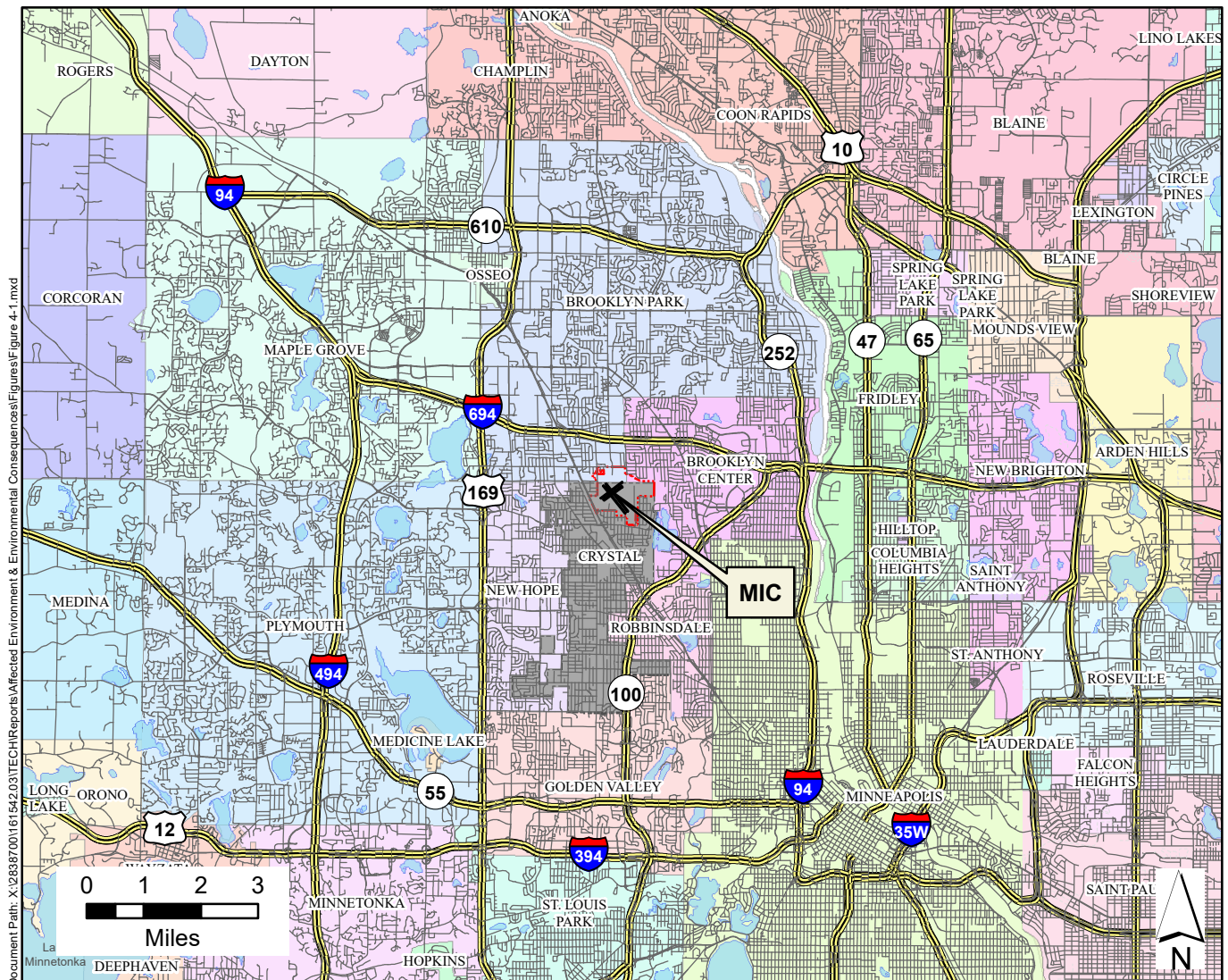
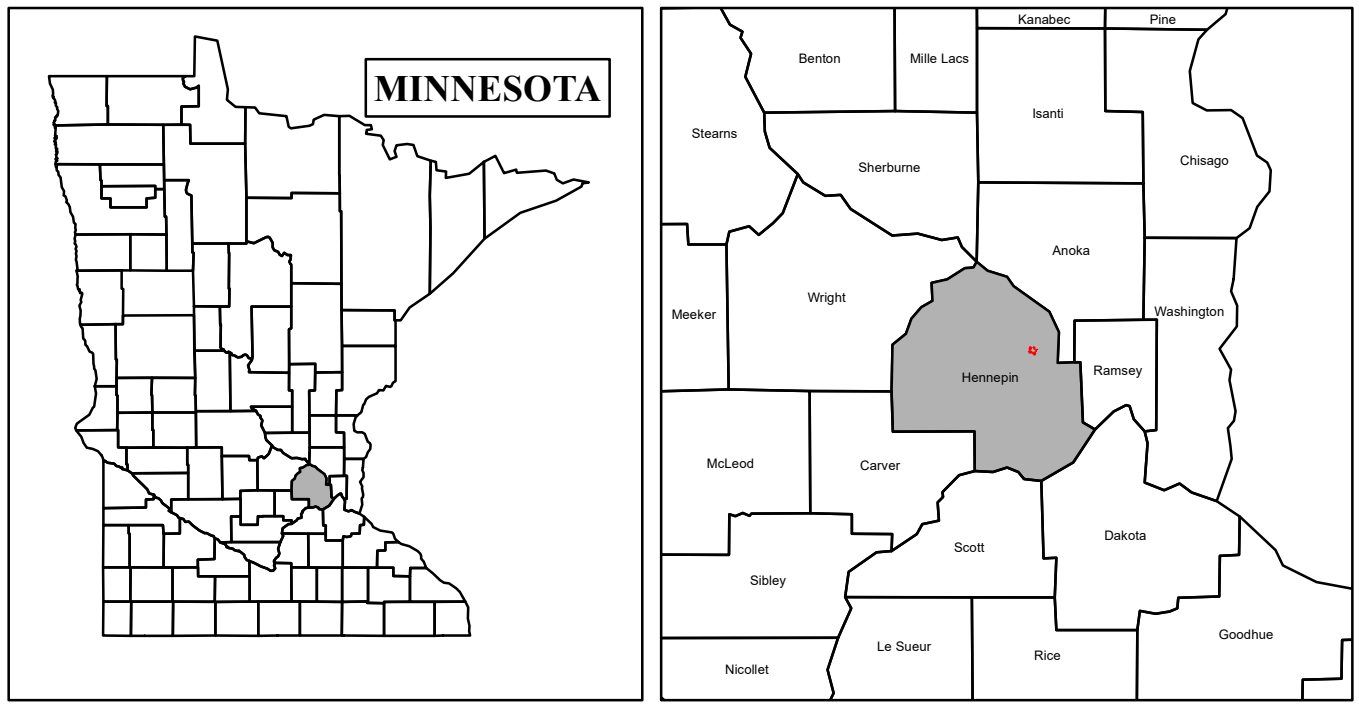
Airport Location and Description

Located in Hennepin County northwest of Minneapolis, Minnesota, Crystal Airport is a 436-acre public airport owned and operated by the Metropolitan Airports Commission (MAC). The MAC is an airport authority created by state law in 1943 to provide coordinated aviation services and promote air transportation and air commerce within the Minneapolis-St. Paul Metropolitan Area. The MAC owns and operates seven airports in the metropolitan area including Crystal Airport, which was established in 1949 and is classified by the MAC as a “complementary reliever”. The primary role of Crystal Airport is to accommodate personal, recreational, and some business aviation users in the western portion of the metropolitan area, and to relieve general aviation demands and congestion at Minneapolis-St. Paul International Airport (MSP). Crystal is the closest MAC reliever airport to downtown Minneapolis. Most of the Airport is located within the city limits of Crystal, with the northernmost portions of the Airport property located within the city limits of Brooklyn Park and Brooklyn Center. The Airport is primarily accessed from County Road 81 (Bottineau Boulevard), Bass Lake Road, and 63rd Avenue. The Airport is also near Interstate 94/694, State Highway 100, and U.S. Highway 169, which link the Airport to the rest of the metropolitan area. Airport location, topographic, and airfield layout maps are shown in **Figures 4-1, 4-2, and 4-3** respectively. Study areas for each resource category are defined in each section and summarized in **Table 4-1** on the next page.

As noted in Chapter 2, Crystal Airport has three paved runways and one turf runway. The main primary runway, 14L/32R, is 3,267 feet long and has paved blast pads on each end that are not considered useable pavement when calculating aircraft takeoff or landing distance requirements. The parallel primary runway, Runway 14R/32L, is 3,266 feet long. Both runways are 75 feet wide. These runways have a full-length parallel taxiway on their southwest side (Taxiway E) with four connector taxiways (Taxiways E1 through E4). The Taxiway E system varies in width between 30 and 40 feet. The paved crosswind runway, 06L/24R, is 2,500 feet long and 75 feet wide. The Runway 06L landing threshold is displaced by 390 feet, and the Runway 24R landing threshold is displaced by 389 feet, to provide a compliant runway safety area and clear obstructions in the approaches to this runway. Runway 06R/24L, the turf crosswind, is 2,123 feet long and approximately 137 feet wide. These runways have a full-length 30-foot wide parallel taxiway to the southeast (Taxiway A) and connector taxiways on each end (Taxiways D and F).

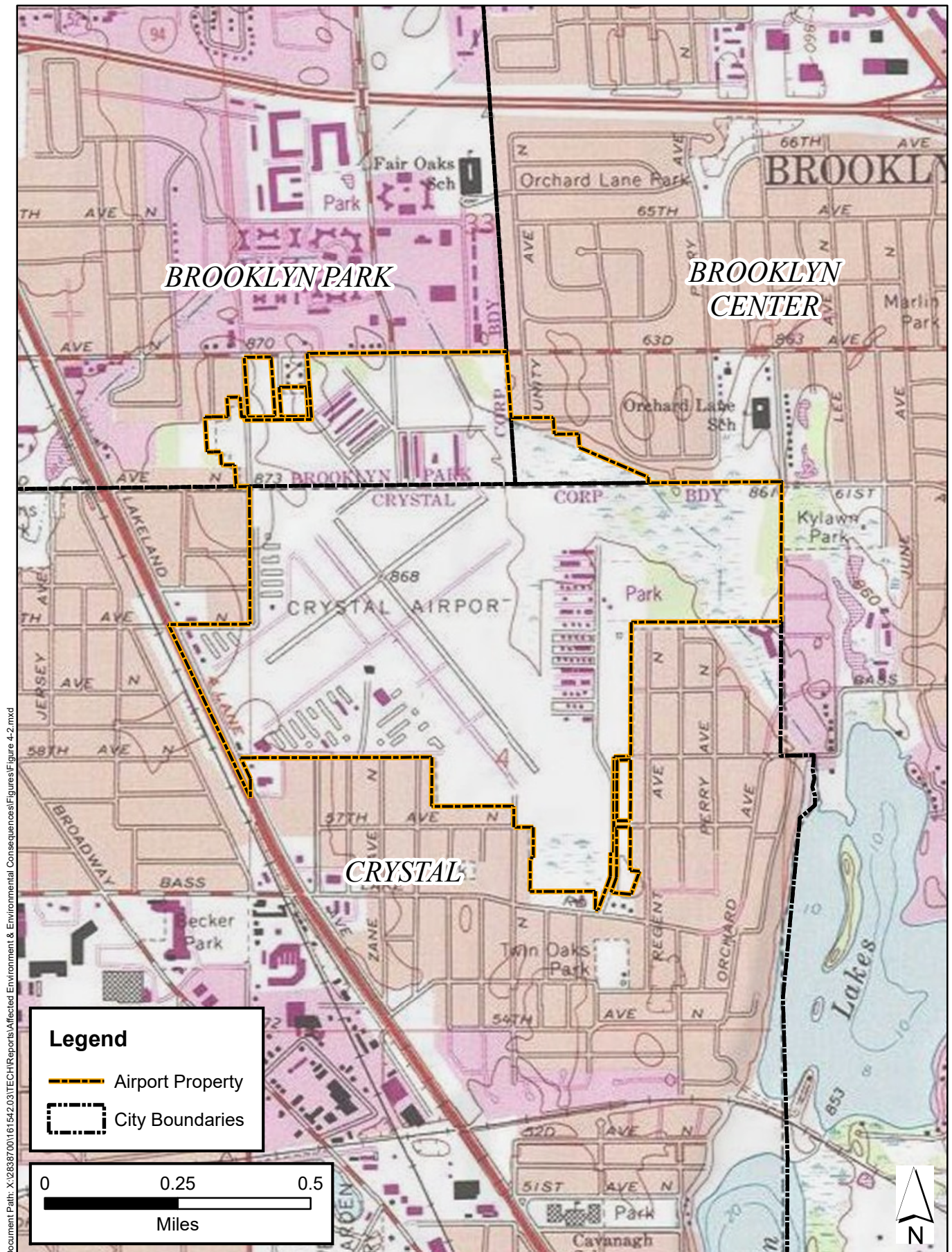
Table 4-1: Resource Category Study Areas	
Resource Category	Study Area
Air Quality	Airport property
Listed Species	- One-mile radius of Airport property for State of Minnesota list - Hennepin County for federal list
Vegetation, Land Cover, and Wildlife Hazard Management	- Airport property - Properties directly adjacent to the Airport - Properties beneath runway approach and departure surfaces
Climate	Airport property
Department of Transportation Section 4(f)	- Airport property - Properties directly adjacent to the Airport - Properties beneath runway approach and departure surfaces
Hazardous Materials, Solid Waste, and Pollution Prevention	- Airport property - Properties directly adjacent to the Airport
Historic, Architectural, Archeological, and Cultural Resources	- Airport property - Properties directly adjacent to the Airport
Land Use	One-mile radius of Airport property
Natural Resources and Energy Supply	Airport property
Noise and Compatible Land Use	Area within 65 dB day-night average sound level (DNL) contour
Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety	- Directly affected jurisdictions - Metropolitan area
Visual Effects	- Airport property - Properties directly adjacent to the Airport
Surface Waters and Stormwater	- Airport property - Subwatershed
Floodplains	Airport property
Groundwater	Airport property
Wetlands	Area of Potential Ground Disturbance
Wastewater	Airport property

There are four building areas at the Airport on the north, south, east, and west sides. The south building area is home to the fixed base operator (FBO), the administration building, and the Air Traffic Control Tower. Aircraft on the ground and in controlled airspace receive direction from air traffic controllers in the tower to expedite the flow of air traffic and maintain required aircraft separation.



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FIGURE 4-1
 Airport Location
 Crystal Airport
 Environmental Assessment



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FIGURE 4-2
Topographic Map
Crystal Airport
Environmental Assessment

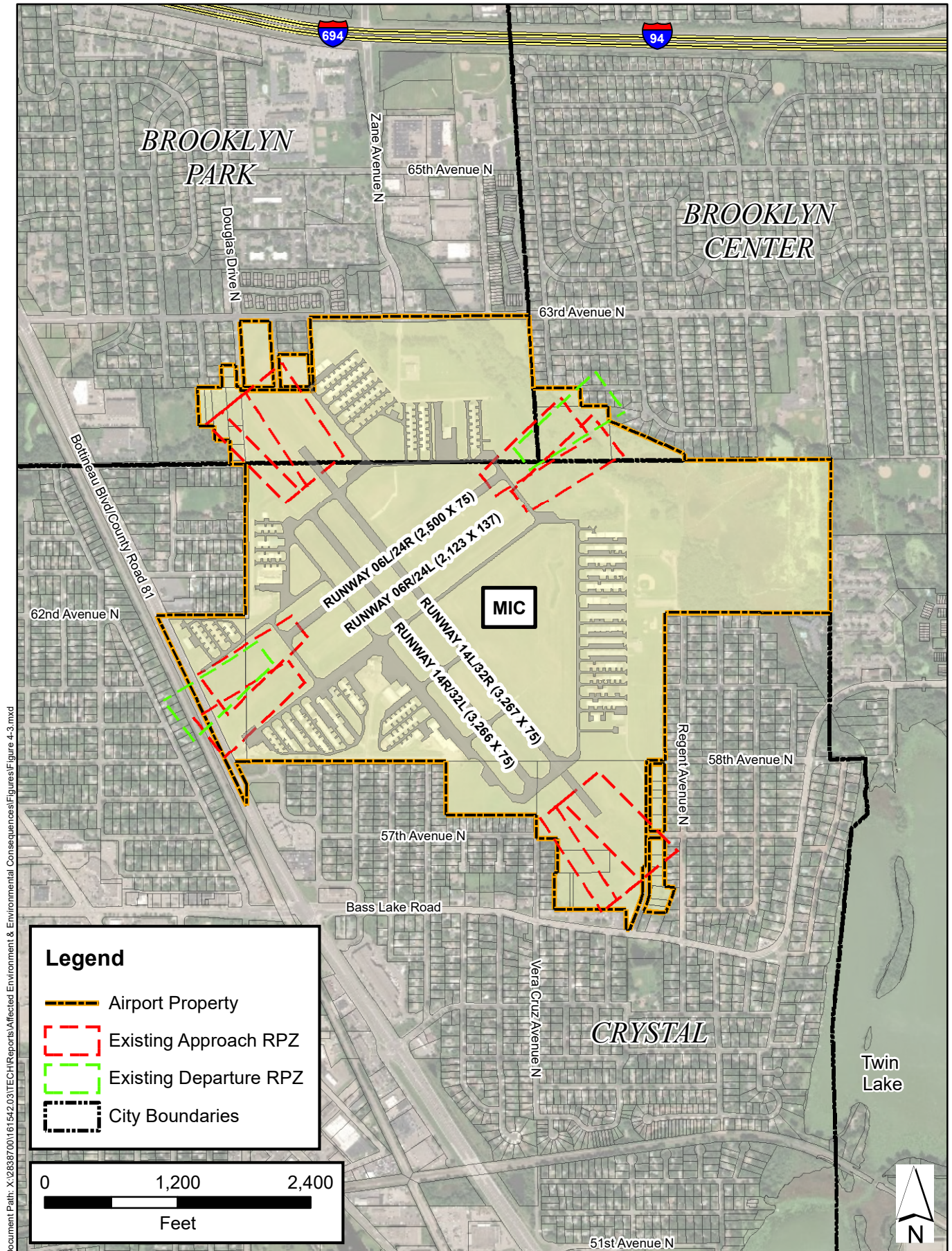


FIGURE 4-3
Current Airfield
Crystal Airport
Environmental Assessment

Topography and Geology

Crystal Airport is situated on relatively flat topography that ranges from 860 to 870 feet above mean sea level. The surface geology on and near the Airport is primarily sand, gravelly sand, and loamy sand overlain by thin deposits of silt, loam, and organic sediment. At Crystal Airport and in other areas that are heavily developed, this terrace deposit is covered by a thick layer of artificial fill. A small portion of Airport property consists of organic postglacial deposits containing peat and organic-rich sediment, including the area of riverine wetland on the northeast side of Airport property, and an area south of the primary runway ends. Much of the Airport site is well drained or moderately well drained. However, the Forada sandy loam soils that make up approximately 17 percent of the surface soils within the perimeter fence are considered poorly drained. Soils comprised of Hubbard loamy sand, which make up approximately 15 percent of the site, are excessively drained. Soils within the fenced area of the Airport are summarized in **Table 4-2**.

Table 4-2: Soils			
Soil Name	Percent of Site	Drainage Class	Acres
Forada sandy loam 0 to 2 percent slopes	17.4%	Poorly drained	59.2
Udorthents, wet substratum 0 to 2 percent slopes	17.0%	Well drained	57.8
Hubbard loamy sand 1 to 6 percent slopes	15.3%	Excessively drained	51.9
Duelm loamy sand 0 to 2 percent slopes	15.2%	Moderately well drained	51.9
Urban land-Udipsammments (cut and fill land) complex 0 to 2 percent slopes	10.0%	Not classified	33.9
Udorthents (cut and fill land) 0 to 6 percent slopes	9.0%	Well drained	30.5
Urban land-Duelm complex 0 to 2 percent slopes	5.7%	Not classified	19.3
Urban land-Udorthents, wet substratum, complex 0 to 2 percent slopes	3.9%	Not classified	13.3
Seelyeville and Markey soils, depressional 0 to 1 percent slopes	3.3%	Very poorly drained	11.3
Urban land-Hubbard complex, Mississippi River Valley 0 to 8 percent slopes	3.0%	Not classified	10.2
Water, miscellaneous	0.3%	Not classified	1.0
Total			340.3

Source: US Dept of Agriculture (USDA) National Resources Conservation Service (NRCS) Web Soil Survey

Note: Soils data in this table do not include areas outside the fence in the MAC Conservation Area.

The depth to bedrock on the Airport is between 50 and 100 feet. The bedrock in this area is St. Peter Sandstone, a quartz-rich sandstone formed in the Middle Ordovician period. This formation is locally well cemented and is composed mainly of fine to medium-grained rounded to sub-rounded quartz grains. The thickness of the bedrock ranges from 85 to 185 feet. A layer of shale or silty sandstone occurs at its base.

4.2 Air Quality

4.2.1 Regulatory Setting

Under the Clean Air Act, the EPA regulates levels of certain pollutants that in high enough concentrations affect air quality and can harm human health, affect crops and vegetation, and cause property damage. According to the FAA Air Quality Handbook, “an EA or EIS typically includes an air quality assessment commensurate with the project air quality impact to help evaluate and disclose the potential effects on air quality associated with the project.” An EAW under MEPA also must consider air quality impacts (Minnesota Rule 4410.1200). Runway and taxiway improvements may cause or create reasonably foreseeable increases in emissions, so this EA/EAW includes an emissions inventory as described in Section 4.2.3.

4.2.2 Affected Environment

When determining air quality impacts, it is important to determine whether a project study area is in an attainment or nonattainment area for the National Ambient Air Quality Standards (NAAQS). As of March 2019, Hennepin County is in a “maintenance area” for sulfur dioxide and carbon monoxide, which means the county was once a nonattainment area for sulfur dioxide and carbon monoxide but now attains NAAQS for those pollutants. Hennepin County is in attainment for all other criteria pollutants. For aviation-related federal actions planned to occur in a maintenance area, the proposed impacts to air quality must conform to the conditions of the applicable State Implementation Plan (SIP). The SIP includes the air quality standards and monitoring requirements set by Minnesota Rules.

A Minnesota Pollution Control Agency (MPCA) air monitoring site is located near the Airport in downtown Minneapolis and measures sulfur dioxide and carbon monoxide, the two pollutants for which Hennepin County is a maintenance area. The 2017 annual measurement for sulfur dioxide at the site was 1.34 parts per billion (PPB), or four percent of the lowest standard. The 2017 test statistic measurement for carbon monoxide at the site was one part per million, or 11 percent of the lowest standard. Aggregate emissions in Minnesota have reduced significantly over the last 20 years. However, monitoring results show that eight-hour ozone levels are at risk for exceeding the NAAQS according to the 2017 MPCA report entitled *The Air We Breathe: The State of Minnesota’s Air Quality*. The closest ozone monitoring station to Crystal Airport is located at the Anoka County-Blaine Airport. In 2017, the results at this monitoring station showed the ozone concentration was 62 PPB, or 89 percent of the lowest standard. The weather patterns in Minnesota contribute to keeping air pollution below unhealthy levels. However, MPCA notes unhealthy ozone days are more likely to occur in the summer when day-time high temperatures are above 90 degrees Fahrenheit.

4.2.3 Environmental Consequences

The FAA considers air quality impacts to be significant if an action will cause pollutant emissions in excess of annual *de minimis* thresholds, or cause pollutant concentrations to exceed one or more of the NAAQS for any of the time periods analyzed or increase the frequency or severity of any existing violations.

Operational Emissions

The MAC developed an aviation operational emissions inventory using the FAA Aviation Environmental Design Tool (AEDT) model. Emissions were modeled for the scenarios analyzed for aircraft noise in Section 4.12 of this document. The study area for emissions is on Airport property. Emissions were calculated for the 2017 baseline (existing conditions) and 2025 forecast (preferred alternative and no-action alternative) scenarios. The year 2025 was chosen for analysis because it is expected to be five years after project implementation, which is within the recommended period of analysis according to the 1050.1 Desk Reference. Annual operations were entered by aircraft type into the AEDT model and split between arrival, departure, and touch-and-go operations. Total baseline (2017) annual operations included 36,134 aircraft takeoffs, landings, and touch-and-go's. The 2017 operations estimate was developed based on available activity data as described in **Appendix I**. The no-action alternative (2025) scenario was modeled using 39,025 aircraft operations, and the preferred alternative (2025) scenario was modeled using 39,258 aircraft operations¹. The 2025 operations projections were developed based on the 2035 LTCP forecasts². The results of the operations emissions inventory are presented in **Table 4-3** on the next page. The AEDT model estimates an overall increase in pollutant emissions between the 2017 baseline and 2025 forecast scenarios. The increase is caused by the increased aircraft operations anticipated by both the 2025 no-action and preferred alternative forecast.

Although there are slight emissions increases in 2025 under both the no-action and preferred alternatives, changes in emissions are below the *de minimis* thresholds for maintenance areas listed by the FAA Aviation Emissions and Air Quality Handbook Version 3, Update 1 (January 2015).

Construction Emissions

The MAC used the Airport Construction Emissions Inventory Tool (ACEIT) to model construction activities for the preferred alternative. The ACEIT inventory uses general assumptions for the construction phases based on the MAC's latest capital improvement plan for the Airport. The results of the construction emissions inventory are presented in **Table 4-4** on the next page.

Total emissions associated with construction are not expected to exceed the *de minimis* thresholds listed in the FAA's Aviation Emissions and Air Quality Handbook Version 3, Update 1 (January 2015), shown in **Table 4-4**. Construction emissions will be offset through use of voluntary best management practices (BMPs) such as engine idling restrictions and maintenance requirements, and other control strategies identified in the *U.S. Environmental Protection Agency Diesel Emissions Restriction Checklist*.

¹ The preferred alternative is expected to attract additional operations at the Airport resulting in higher projected operations than the no-action alternative.

² MAC developed forecasts that differ from the FAA Terminal Area Forecasts to account for the projected differences in activity at the Airport resulting from implementation of the preferred alternative. TAF forecasts assume no action.

Table 4-3: Operational Emissions Inventory							
Emissions Source	Pollutant Emissions (tons)						
	CO	VOC	NOx	CO₂	SO₂	PM_{2.5}	PM₁₀
2017 Baseline Operational Emissions							
Aircraft - Taxi Out	14.728	0.876	0.022	55.440	0.022	0.007	0.007
Aircraft - Takeoff and Climb out	63.499	0.529	0.281	243.079	0.088	0.062	0.062
Aircraft - Approach and Landing	101.025	0.891	0.387	364.128	0.135	0.066	0.066
Aircraft - Taxi In	9.687	0.577	0.015	35.737	0.015	0.004	0.004
Ground Service Equipment	0.018	0.014	0.059	0.000	0.000	0.001	0.001
TOTAL	188.957	2.886	0.764	698.384	0.259	0.140	0.140
2025 Forecast Operational Emissions (No-Action Alternative)							
Aircraft - Taxi Out	16.524	0.986	0.026	62.459	0.022	0.007	0.007
Aircraft - Takeoff and Climb out	66.485	0.555	0.299	257.351	0.099	0.066	0.066
Aircraft - Approach and Landing	106.565	0.949	0.402	383.232	0.142	0.066	0.066
Aircraft - Taxi In	10.804	0.642	0.015	39.982	0.015	0.007	0.007
Ground Service Equipment	0.020	0.016	0.066	0.000	0.000	0.001	0.001
TOTAL	200.398	3.147	0.807	743.023	0.278	0.147	0.147
Difference from 2017 Baseline	11.441	0.261	0.043	44.640	0.018	0.007	0.007
2025 Forecast Operational Emissions (Preferred Alternative)							
Aircraft - Taxi Out	16.056	1.026	0.029	65.755	0.026	0.007	0.007
Aircraft - Takeoff and Climb out	65.171	0.544	0.310	260.128	0.095	0.066	0.066
Aircraft - Approach and Landing	106.014	0.964	0.416	389.966	0.146	0.066	0.066
Aircraft - Taxi In	10.632	0.668	0.018	41.953	0.015	0.007	0.007
Ground Service Equipment	0.020	0.016	0.069	0.000	0.000	0.001	0.001
TOTAL	197.894	3.217	0.842	757.802	0.281	0.147	0.147
Difference from 2017 Baseline	8.937	0.330	0.079	59.418	0.022	0.007	0.007
Annual de minimis threshold for difference in emissions for maintenance area (tons/yr)	100	100	100	NA	100	100	100

Sources: FAA Aviation Environmental Design Tool (AEDT), Mead & Hunt

Table 4-4: Construction Emissions Inventory						
Construction Year	Pollutant Emissions (tons)					
	CO	NOx	SO₂	PM₁₀	PM_{2.5}	VOC
2019	2.23	1.72	0.01	0.34	0.08	3.66
2020	2.44	1.89	0.01	0.38	0.09	5.20
TOTAL	4.67	3.61	0.02	0.72	0.17	8.87
Annual de minimis threshold for maintenance area (tons/yr)	100	100	100	100	100	100

Sources: FAA Airport Construction Emissions Tool (ACEIT), Mead & Hunt

Road Vehicle Emissions

The EQB EAW Guidelines published October 2013 state that when there is no reason to expect new or worsened traffic congestion from a proposed project, or if the parking capacity of the site has fewer than 2,000 parking spaces, a detailed air quality analysis for vehicle emissions is not required. The proposed perimeter roads will not create additional traffic because they will accommodate existing traffic that currently crosses the airfield. The travel distance across the airfield will be longer using the new service roads, but idling time where vehicles currently must hold short of runways and taxiways will be reduced. For these reasons, significant increases in vehicle emissions are not expected with the preferred alternative.

Conclusion

Operational and construction emissions fall below the FAA *de minimis* thresholds in both the no-action and preferred alternative scenarios. Impacts to traffic will be minimal and do not require a vehicle emissions analysis. Based on these factors, significant air quality impacts are not anticipated for the preferred alternative or no-action alternative.

4.3 Biological Resources

Biological resources are defined as the various types of flora and fauna in a particular area as well as rivers, lakes, wetlands, forests, upland communities, and other habitats supporting flora and aquatic and avian fauna. The biotic resources section of an EA/EAW also addresses effects on federal- and state-listed rare or unique species and their habitats. This section is divided into two parts: (1) Listed Species; and (2) Vegetation, Land Cover, and Wildlife Management.

4.3.1 Listed Species

Regulatory Setting

The primary federal regulation for biotic resources is the Endangered Species Act (ESA), 16 USC §§ 1531-1544, administered by the U.S. Fish and Wildlife Service (USFWS). The ESA requires all federal agencies to conserve threatened and endangered species and, in consultation with the USFWS, ensure federal actions do not jeopardize the existence or destroy critical habitat of threatened and endangered species. Overall coordination on species and habitats of concern is administered under Section 7 of the ESA, which requires federal agencies to consult the USFWS and appropriate state fish and wildlife agencies when a federal project may adversely affect fish or wildlife resources.

Additional federal regulations of wildlife include the Migratory Bird Treaty Act (MBTA), 16 USC §§ 703-712, administered by the USFWS. The MBTA prohibits the taking, selling, or other activities that harm migratory birds, bird eggs, or nests unless authorized by a special USFWS permit. In addition, the Bald and Golden Eagle Protection Act (BGEPA), 16 USC §§ 668-668d, provides protection to eagles and nests from unauthorized capture, purchase, or transportation.

On the State level, Minnesota's Endangered Species, Minn. Stat. § 84.0895 and the associated Rules, Minn. R. 6212.1800-6212.2300, impose a variety of restrictions, a permit program, and several

exemptions pertaining to species designated as endangered or threatened. A person may not take, import, transport, or sell any portion of an endangered or threatened species.

Affected Environment

The Minnesota Department of Natural Resources (MDNR) Natural Heritage Information System (NHIS) is a collection of databases containing information about rare and natural resources in Minnesota and is maintained by the MDNR Division of Ecological and Water Resources. The MAC's consultant requested MDNR to query the NHIS to determine whether there are any records of rare species, state-listed species, or other significant natural features within the study area, an approximate one-mile radius of the Airport. The MDNR responded with correspondence # ERDB 20180275 (see **Appendix A**). The NHIS identified the Rusty Patched Bumble Bee (RPBB) (*Bombus affinis*) as a federally-listed endangered species that has been documented within the study area. There are numerous state-listed species in Hennepin County, but none were identified within the project area by the MDNR correspondence. The letter did not identify any other species or resources of concern.

As of March 2019, there were four federally-listed species with habitat in Hennepin County, including the RPBB. Two of these species are freshwater mussels with habitat in the Mississippi River and are not found within the project area. According to the USFWS Information for Planning and Consultation (IPaC) online tool, there is one threatened species located in the Airport vicinity, and that is the northern long-eared bat (NLEB) (*Myotis septentrionalis*). There are no critical habitats for either the RPBB or the NLEB within the project area. The IPaC tool also identified 13 bird species listed as Birds of Conservation Concern that have been observed within approximately six miles of the Airport that are protected by the MBTA, along with the bald eagle, which is protected by the BGEPA.

Environmental Consequences

According to the FAA 1050.1F Desk Reference, the FAA considers impacts on listed species to be significant if the "U.S. Fish and Wildlife Service or the National Marine Fisheries Service determines that the action would be likely to jeopardize the continued existence of a federally-listed threatened or endangered species, or would result in the destruction or adverse modification of federally-designated critical habitat."

Based on the responses from the MDNR NHIS and USFWS IPaC, all relevant federal and state protected species associated with Crystal Airport are listed in **Table 4-5**. These species have potential habitat at or near Crystal Airport, and/or have been documented as occurring within a one-mile radius of the Airport. Characteristics, habitat, and mitigation measures associated with each of these species are discussed below.

Table 4-5: Protected Species with Potential Habitat at or near Crystal Airport			
Common Name	Scientific Name	Federal Status	State Status
Northern long-eared bat	<i>Myotis septentrionalis</i>	Threatened	Not Listed
Rusty patched bumble bee	<i>Bombus affinis</i>	Endangered	Not Listed
Bald eagle	<i>Haliaeetus leucocephalus</i>	Protected	Not Listed

Northern long-eared bat

The northern long-eared bat (NLEB) is listed as threatened throughout its extensive range, including all of Minnesota, 36 other states, and multiple southeastern Canadian provinces. The predominant threat is white-nose syndrome, a fungal disease which has eliminated up to 99 percent of NLEB populations in the northeastern United States. During summer, the NLEB typically roosts singly or in colonies under bark, in cavities, or in crevices of living and dead trees. Males and non-reproductive females may also roost in caves and mines during the summer. Most hibernate during winter in caves and mines with constant temperatures, high humidity, and no air currents. No critical habitat has been designated for this bat.

The “4(d) rule” is one of many tools found within the Endangered Species Act (ESA) for protected species listed as “threatened.” The rule derives its name from Section 4(d) of the ESA, which directs the USFWS to issue regulations deemed “necessary and advisable to provide for the conservation of threatened species.” The 4(d) Rule for conserving the NLEB may regulate tree removal or other activities if the activities are conducted within one quarter mile of an entrance to a known NLEB hibernaculum (a cave, mine, or other feature in which NLEBs have been documented to overwinter), or within 150 feet of a known NLEB maternity roost tree (a tree in which a female NLEB has been documented to roost). The April 1, 2018, MDNR list of Hennepin County townships with documented NLEB maternity roost trees or hibernacula entrances did not include the Crystal Airport or any adjoining townships.³ Because the proposed project is within a mostly developed area and does not include documented suitable or designated critical habitat, the proposed action will likely have no effect on the NLEB.

The MAC proposes the following mitigation measures or Avoidance and Minimization Measures (AMMs) for tree removal from the *Range-Wide Biological Assessment for Transportation Projects for Indiana Bat and Northern Long-Eared Bat* (USFWS/USDOT, April 2015) to protect the NLEB:

Tree Removal AMM 2 - To avoid and minimize impacts to the NLEB, tree removal will be completed between October 1 and April 30, which is the dormant season for the bat at this latitude.

Tree Removal AMM 3 - Tree removal will be limited to that specified in project plans. Tree removal limits will be clearly indicated in the field by bright orange flagging/fencing prior to any tree clearing to ensure contractors stay within clearing limits. Tree clearing limitations will be discussed with contractors at the pre-construction meeting to ensure that they understand clearing limits and how they are marked in the field.

A federal agency may rely upon the finding of the programmatic biological opinion for the final 4(d) Rule determination and to fulfill its project-specific responsibilities under Section 7 of the ESA. The FAA made a “may affect, not likely to adversely affect” determination on February 7, 2019, and the USFWS concurred with this determination in an email dated March 15, 2019 (see **Appendix B**). Because tree removal will not take place during a period when the species would be present in the action area, the USFWS does not expect any direct effects to the species as a result of the proposed action.

³ http://files.dnr.state.mn.us/eco/ereview/minnesota_nleb_township_list_and_map.pdf

Rusty patched bumble bee

Rusty patched bumble bees (RPBB) live in colonies that have an annual cycle. The bees gather pollen and nectar from a variety of flowering plants and prefer tallgrass prairie habitat. Historically, the bees' range included 28 states, the District of Columbia, and two provinces in Canada. Since 2000, the RPBB has been reported in only 13 states and one Canadian province. Bumblebees play a major role in wildflower reproduction and pollination of blueberries, cranberries, and clover. The RPBB is virtually the only insect that pollinates tomatoes, making it a vital part of our food security and ecosystem. The bees once occupied grasslands and tall grass prairies of the Upper Midwest and Northeast, but most grasslands have been converted to monoculture farms, cities, or roads. Other contributors to RPBB habitat loss include intensive farming causing a heavy increase of pesticide usage, to which RPBB may be vulnerable. A combination of the loss of habitat and related diversity of flowering plants because of intense farming and general development, along with pesticide use, led to the listing of this species as endangered in January 2017.

No critical habitat has been designated for the RPBB. According to the USFWS website, the Airport is in a low potential habitat zone for the RPBB. There are no areas of tallgrass prairie within the study area, and areas dominated by grasses are mowed on a regular basis. Therefore, the proposed action does not affect vegetation types that provide habitat for the RPBB. The USFWS IPaC tool does not identify the RPBB as present within the limits of ground disturbance. Because the proposed project is within a developed area, in a low potential habitat zone for the RPBB, and does not affect any prairie habitat, the proposed project will have no effect on the RPBB or its habitat. As a result, no avoidance or mitigation measures are necessary for the RPBB.

The FAA made a no-effect determination on February 7, 2019, and the USFWS concurred with this determination in an email dated March 15, 2019 (see **Appendix B**).

Migratory Birds and Bald Eagles

Seven of the bird species protected by the MBTA found near the Airport have nesting seasons that fall between May and October. According to the IPaC species list, these species have been documented by USFWS survey sources during these months within approximately six miles of the Airport within the past ten years. These species include the black-billed cuckoo, the eastern whip-poor-will, the golden-winged warbler, the least bittern, the red-headed woodpecker, the willow flycatcher, and the wood thrush. The breeding season for the bald eagle extends from December to August, however eagles typically nest near bodies of water and away from developed areas. The other listed birds nest elsewhere in their range or have not been observed in the project area during nesting season. Many of the birds are typically found in densely wooded or wetland habitats, and while they are not likely to be affected by the proposed project where ground disturbances will primarily be limited to regularly mowed airfield areas, off-Airport tree removal has the potential to disturb some wooded wetland habitat.

Prior to any construction activity during the nesting season, an MBTA nesting bird survey will be completed. Tree removal will occur outside of nesting months for birds observed in the area during their nesting season.

4.3.2 Vegetation, Land Cover, and Wildlife Hazard Management

Regulatory Setting

The Endangered Species Act also guides actions regarding vegetation management and land cover as it pertains to habitat for sensitive species. In addition, Executive Order 13112, *Invasive Species*, directs federal agencies to use all feasible and prudent means to prevent the introduction of invasive species, and to provide for the restoration of native species and habitat conditions in ecosystems that have been invaded.

Affected Environment

According to the MDNR ecological classification system used to identify areas with similar ecological features, the Crystal Airport is located within the Anoka Sand Plain subsection of the Eastern Broadleaf Forest Province. This subsection consists of a flat, sandy lake plain and terraces along the Mississippi River. The predominant pre-settlement vegetation in this subsection was oak barrens and openings, with some brushland, upland prairie, and floodplain forest. Today, the area around the Airport is a developed urban environment, except for the MAC Conservation Area and Twin Creek on Airport property, which are undeveloped wooded wetland environments that are manipulated for stormwater management.

Table 4-6 summarizes existing land cover within the fenced area of the Airport. The most common land cover at Crystal Airport is short grasses on upland soils. These short grasses are mowed regularly as part of maintenance and wildlife hazard management efforts at the Airport. Impervious cover is significant at the Airport and includes 78.8 acres with 91-100 percent impervious cover, including structures, 40.5 acres with 76-90 percent impervious cover, and 1.6 acres of short grass and trees that are 26-75 percent impervious surface.

Table 4-6: Land Cover	
Land Cover Category	Acres
Altered/non-native deciduous woodland	2.2
Altered/non-native grassland with sparse deciduous trees – saturated soils	1.9
Buildings and pavement with 76-90 percent impervious cover	40.5
Buildings and pavement with 91-100 percent impervious cover	36.0
Pavement with 91-100 percent impervious cover	42.8
Seasonally flooded altered/non-native dominated emergent vegetation	0.8
Short grasses and mixed trees with 26-75 percent impervious cover	1.6
Short grasses on upland soils	219.1
Total	344.9

Source: Minnesota Land Cover Classification System (MLCCS) dated 3/21/2018, MDNR, based on information from CCES, Inc.

Land cover near the Airport, including under approach and departure areas, is also a developed urban environment consisting of a mix of impervious surfaces and mowed grass. However, these areas include more tree cover than Airport property in residential lots, along streets, and in parks. Predominant tree species in the area include silver maple (*Acer saccharinum*), green ash (*Fraxinus pennsylvanica*), cottonwood (*Populus deltoides*), and a mix of others.

Some plants outside of the perimeter fence on Airport property are invasive species. These include cattail (*Typha angustifolia*) and reed canary grass (*Phalaris arundinacea*) in wetland areas, and buckthorn (*Rhamnus cathartica*) in forested areas.

In 2013, the USDA Wildlife Services agency conducted a Wildlife Hazard Assessment (WHA) for Crystal Airport. The study noted short and long grasses, some wetland areas, as well as woodland areas inside the perimeter fence. This mix of environments provides habitat for some of the species observed on the Airport during the study, which included mallard ducks and Canada geese, several other types of birds, and small mammals. White-tailed deer were also observed outside of the perimeter fence during the study period. These species are among those prone to wildlife strikes nationwide and have contributed to the 20 incidents at Crystal Airport reported to the FAA Wildlife Strike Database between 1990 and 2013.

The WHA report discussed wildlife hazards associated with the MAC Conservation Area, which includes woodland habitat, cattail marsh, and a small creek. The assessment explained the potential for this area to attract several types of wildlife, including hawks, crows, deer, fox, coyotes, and raccoons. There are privately-owned properties near the Airport that host forested areas, wetlands, and lawns that provide environments for wildlife. Twin Lake is situated approximately one-half mile from the Runway 32L and 32R ends, and many other water resources exist outside of the Airport on both City and residential properties. Southbrook Park community garden is located outside the perimeter fence on the northwest side of Airport property. These are all considered wildlife attractants.

The WHA report concluded that Crystal Airport has habitat attractive to wildlife both inside and outside its perimeter fence. The area inside the fence contains wooded, brushy, and wetland areas where mammals take cover and birds and waterfowl may nest or perch. Areas outside of the fenced area, such as the wildlife area and the community garden, are environments that may encourage wildlife to cross the airfield by going through or over perimeter fencing. Recommendations in the assessment based upon these factors include:

- Conduct regular fence inspections.
- Increase height of fence in some locations and add a fence skirt.
- Reduce the amount of attractive habitat inside the fence or reroute the fence around the habitat.
- Improve drainage to reduce temporary standing water.
- Install anti-perching devices on navigational aids within the movement area.

Environmental Consequences

The proposed action will require the removal of trees on Airport property to accommodate future non-aeronautical development along 63rd Avenue North, as well as removal or trimming of several off-Airport trees to clear the applicable runway approach threshold siting surfaces (TSS). An obstruction analysis conducted for the recent Airport Layout Plan (ALP) update identified several trees in the approach and departure areas. The MAC proposes to remove or trim any on- or off-Airport trees currently penetrating the applicable approach TSS prescribed by FAA Advisory Circular (AC) 150/5300-13A, *Airport Design*, Draft Change 2, as well as any additional trees that should be removed or trimmed to provide a clear approach TSS for a reasonable period beyond project implementation. The timeframe analyzed in this EA/EAW document is eight years, which includes time for the environmental review and design phases

and provides a forecast for approximately five years from project implementation. The MAC also proposes to remove or trim any on-Airport trees that penetrate the departure surface defined by FAA Order 8260.3D, *U.S. Standard for Terminal Instrument Procedures* (TERPS). Off-Airport trees penetrating the departure surface will remain, as these trees may be avoided through use of notes published in instrument departure procedures. The MAC will continue to monitor tree growth and request that FAA publish obstacle notes in the flight procedures, as needed.

A Tree Mitigation and Growth Analysis report completed in May 2018 compared tree heights from 2013 Airports Geographic Information System (AGIS) data to a December 2017 spot survey, and incorporated growth rates observed by a certified arborist in May 2018 (see **Appendix C**). This study established appropriate growth rates to determine if trees are likely to penetrate the approach TSS within five years of project implementation. The study also considered the growth rate of 2.5 feet per year suggested by the FAA in Engineering Brief 91, *Management of Vegetation in the Airport Environment*.

Some trees near the Airport will require removal under the no-action alternative. Monitoring tree heights and removing or trimming potential obstructions is an ongoing maintenance measure. An obstruction analysis conducted in 2018 identified approximately eight existing off-Airport points currently penetrating the approach TSS for Runways 14L/32R and 6L/24R, which slopes upward one vertical foot for every 20 horizontal feet starting 200 feet from the runway threshold (the beginning of the runway available for landing). The obstruction analysis identified several additional areas with trees forecasted to penetrate the TSS within five years of project implementation. These areas are shown in **Figure 4-4**. The areas include up to 38 trees found on private properties and up to three trees in public rights-of-way in the approaches to Runways 14L/32R and 6L/24R. While some of these trees will need to be trimmed or removed for the no-action alternative, there is an increase in the number of projected tree obstructions with the preferred alternative. The projected removals also include approximately 32 trees within a city park in the Runway 14 approach, which is discussed in more detail in Section 4.6.3 of this document.

Along with regular growth, the increase in tree penetrations is partially because of the shift of the TSS aligned with the 115-foot shift of Runway 14L/32R to the northwest, which introduces lower elevation limits for trees off the Runway 14L end. However, the preferred alternative also reduces the total area of the TSS that must be kept clear due to the closure of Runway 14R/32L. Any removals will be carefully targeted individual trees and will not involve clear-cutting stands of trees. Identification of specific trees to be removed or trimmed will be determined during the detailed project design phase.

The off-Airport trees to be removed include the species cottonwood, birch, white poplar, Siberian elm, red maple, Douglas fir, ash, box elder, and spruce. Although targeted tree removal is expected to occur off-Airport, such removal is not expected to result in adverse impacts to special status species, or loss, degradation, or fragmentation of native species' habitats. Off-Airport tree removal will not target stands or large groupings of trees that will significantly disrupt habitats. In addition, the environment around the off-Airport tree removals is already fully urbanized and developed.

Document Path: \\corp.meadhunt.com\shared\folder\sen\p\2838700\161542.03\TECH\Reports\Affected Environment & Environmental Consequences\Figure 4-4 with LIDAR polygons.mxd

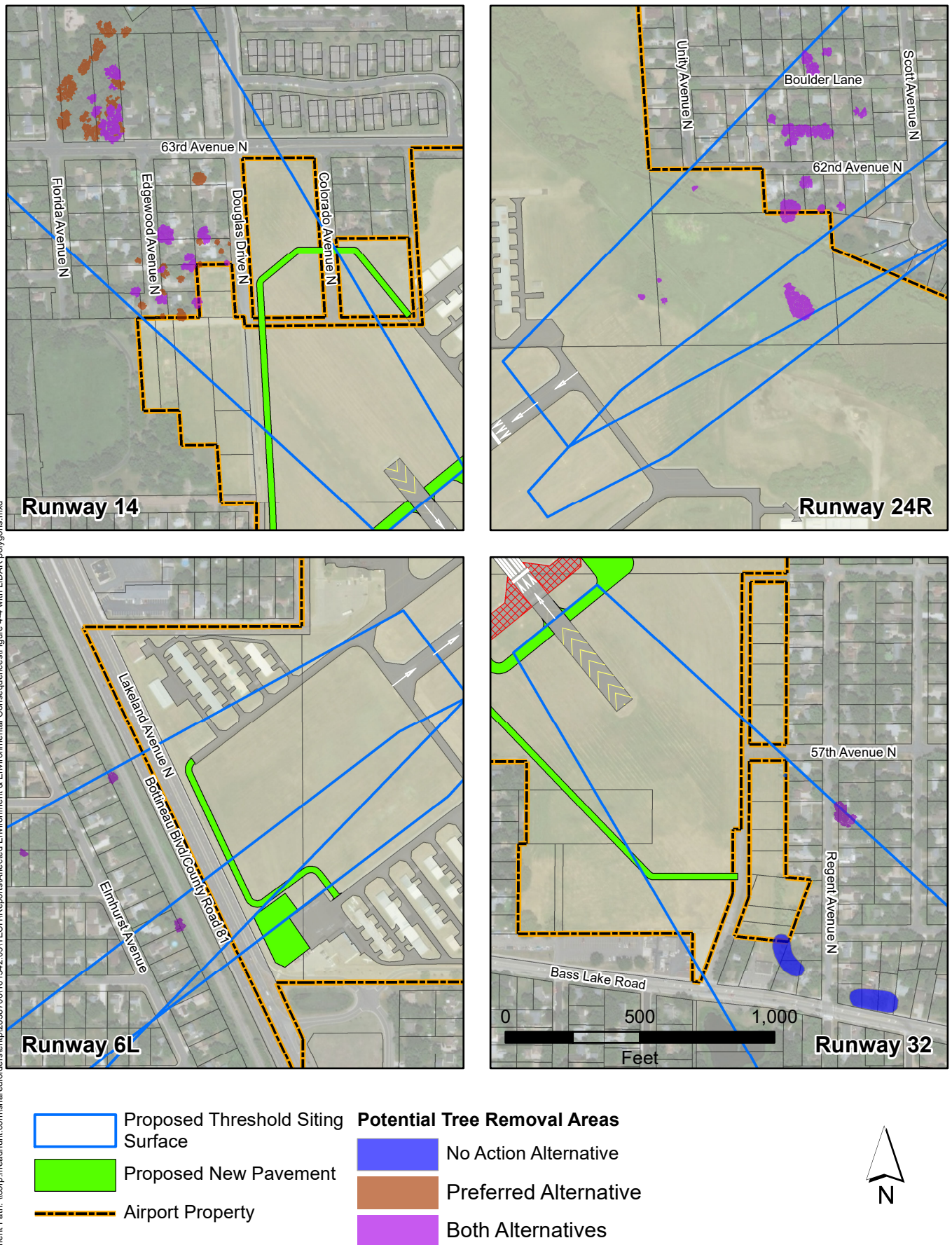


FIGURE 4-4
Tree Removal Areas
Crystal Airport
Environmental Assessment

Current vegetation management practices at the Airport include mowing the areas within the perimeter fence on a regular basis. Areas disturbed during construction will be seeded with a variety of turf grasses. Vegetation management post-construction will continue with regular mowing, which serves to minimize wildlife hazards while also minimizing the introduction and establishment of invasive species. Introduction and spread of invasive species at the Airport will also be minimized prior to, during, and after construction of the proposed project through a variety of best management practices.

4.3.3 Biological Resources Conclusion

Based on the information above and established FAA and MEPA thresholds of significance, there are no significant impacts to biological resources associated with the preferred alternative or no-action alternative.

4.4 Climate

4.4.1 Regulatory Setting

The FAA 1050.1F Desk Reference defines greenhouse gas (GHG) emissions as carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). The guide notes that CO₂ is the most important GHG emitted by human activity because of its long life of up to 100 years in the earth's atmosphere. It is also the only GHG that is a direct aircraft combustion product.

The FAA 1050.1F Desk Reference states that considering GHG emissions for a NEPA review should follow the basic procedure of considering the potential incremental change in carbon dioxide equivalent (CO₂e) emissions that result from the proposed action compared to the no-action alternative for the same timeframe. An EA/EAW should also discuss the context for interpreting and understanding the potential changes.

4.4.2 Affected Environment

According to an August 2016 publication from the EPA, Minnesota has warmed from one to three degrees in the last century, and the trend is expected to continue. In *The Air We Breathe 2017*, the MPCA noted that eight of the ten warmest years on record in the state have occurred since 1998. This warming has had several related effects, including heavier precipitation. Rainfall during the four wettest days of the year in the Midwest has increased about 35 percent in the last 50 years. This increases the risk of flooding, including in the upper Mississippi watershed. The EPA states that higher temperatures may also lead to changes in water quality in Minnesota, because warmer water results in more algal blooms as more intense and frequent storms can increase the amount of pollutants entering the water due to runoff. Other related effects include those linked to air pollution, due to higher temperatures that increase the formation of ground-level ozone.

4.4.3 Environmental Consequences

The FAA has not established significance thresholds for aviation GHG emissions, and NEPA documents typically do not attempt to link specific project emissions to climatological changes because the specific impacts are difficult to analyze. The overall reduction of aviation related GHG emissions impacts on climate is a goal, but it is not a regulatory mandate.

Based on the air quality analysis and study area presented in Section 4.2, the proposed action will result in temporary increases in direct on-site CO₂e emissions attributable to construction equipment. Total construction CO₂e emissions are estimated at 2,483 tons over a two-year period. On-site operational CO₂e emissions attributable to aircraft operations are expected to increase by 44.64 tons per year from 698.38 tons in 2017 to 743.02 tons in 2025 under the no-action alternative, and by 59.42 tons to 757.80 tons per year in 2025 under the preferred alternative. In its January 2019 biennial GHG emissions report to the state legislature, the Minnesota Pollution Control Agency (MPCA) estimated statewide CO₂e emissions in 2016 at 154.2 million tons, while the U.S. Environmental Protection Agency (EPA) estimated nationwide CO₂e emissions in 2017 at 6,457 million tons. Based on these estimates of CO₂e emissions, the potential for the preferred alternative to affect future climate conditions is very limited when considering the amount of CO₂e emissions attributable to other sources in Minnesota and throughout the United States.

There are no analytical or modeling tools available that reliably evaluate the incremental effect of a proposed action's discrete GHG emissions on the global and regional climate. In addition, there are no analytical or modeling tools available that reliably evaluate any cascading effects, or cumulative effects, from a proposed action's GHG emissions on natural ecosystems and human economic systems in each state or region. Future negative impacts on climate conditions are unlikely to affect Crystal Airport in the foreseeable future. The consequences of warming temperatures in Minnesota include increased rainfall and increased chance of flooding. However, all Airport infrastructure is located outside of 100-year floodplains, and there are no major bodies of water close to Airport facilities.

Considering these factors, neither the no-action or preferred alternatives will have a significant impact on climate change.

4.5 Coastal Resources

Coastal resources are not present on or near Crystal Airport, and therefore coastal regulations as defined by the FAA are not applicable to, and will not be affected by, the preferred alternative or no-action alternative.

4.6 Department of Transportation Act, Section 4(f)

4.6.1 Regulatory Setting

Section 4(f) of the Department of Transportation Act of 1966 protects public parklands, historic sites, and other special resources of national, state, or local significance from impacts of transportation projects.

These types of properties are referred to as Section 4(f) properties. The statute states that:

The Secretary of Transportation may approve a transportation program or project requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of an historic site of national, state, or local significance (as determined by the federal, state, or local officials having jurisdiction over the park, area, refuge, or site) only if 1) there is no feasible and prudent alternative to using that land and 2) the program or project includes all possible planning to minimize harm...

According to the FAA's 1050.1F Desk Reference and the FHWA's July 20, 2012, Section 4(f) policy paper, if the proposed project will not adversely affect the activities, features, or attributes qualifying a park for protection under Section 4(f), the FAA may make a *de minimis* determination about the use of a Section 4(f) property. The FAA's finding may also consider mitigation measures. A *de minimis* determination requires public involvement and coordination with the entity that has jurisdiction over the resource.

4.6.2 Affected Environment

There are several city and regional parks near the Airport. The study area includes Airport property, properties directly adjacent to the Airport, and properties beneath runway approach and departure surfaces. Two sites bordering the Crystal Airport and one site under the extended centerline for Runway 14L/32R fit the definition of a Section 4(f) resource. There are two other city parks bordering the Airport to the west, Southbrook Park and Skyway Park, but they are not expected to be adversely affected and are not evaluated in detail in this section based upon their small size and their location outside the proposed runway approach areas. The location of 4(f) resources in relation to the Airport property are shown in **Figure 4-5**.

The 4(f) property adjacent to the west side of the Airport is the Crystal Lakes Regional Trail, which is operated by Three Rivers Park District and governed by the Metropolitan Council's *2040 Regional Parks Policy Plan*. The eastern portion of the MAC-owned property is used as the Crystal MAC Conservation Area and is also a 4(f) property. An additional Section 4(f) property is Edgewood Park, a Brooklyn Park municipal facility found north of the Airport along the extended centerline of Runway 14L/32R. If the airfield improvement project were to significantly impact these resources, further study would be required. This section evaluates the project in relation to these Section 4(f) parkland resources to show that the project will not constitute a use of, or any significant impacts to, these resources.

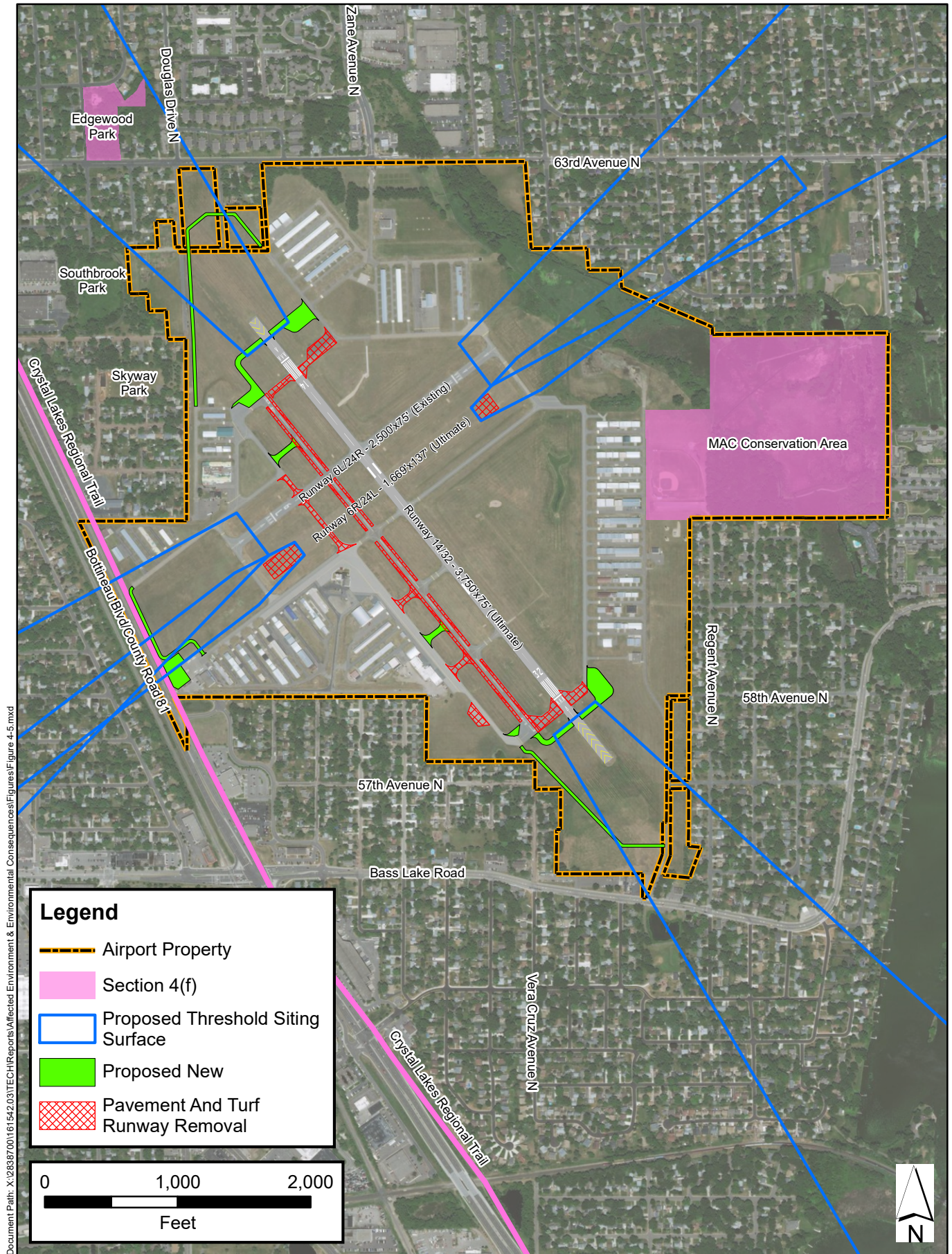


FIGURE 4-5
Section 4(f) Resources
Crystal Airport
Environmental Assessment

The Crystal Lakes Regional Trail is a paved trail for bicycle and pedestrian users. It is currently 4.3 miles long and runs through the cities of Crystal and Robbinsdale. Part of the Three Rivers Park District network of trails, the trail passes by Twin Lake and Crystal Lake, and connects to the larger Three Rivers trail system. The segment of the trail in the study area runs along the west side of Airport property next to Lakeland Avenue, a two-lane frontage road alongside Bottineau Boulevard/County Road 81, which is a six-lane divided road in this location. A freight rail line also runs along the west side of Bottineau Boulevard. Land cover adjacent to this part of the trail is composed of short grasses found on Airport property, along with built-up areas including several businesses and their associated parking lots to the north and south of the Airport. This setting contrasts with greater tree cover and the separation of the trail from busy roads as it approaches the lakes and residential areas to the south. The Metropolitan Council estimates over 206,000 users accessed the various portions of this trail in 2016.⁴

The Crystal Lakes Regional Trail is located within 1,000 feet of the current Runway 6L and 6R ends and is currently directly under their approach and departure surfaces. The trail lies outside of the Airport's 65 decibel day-night average sound level (65 DNL) noise contour. Additional information about DNL noise contours can be found in Section 4.12 of this document. Visually, the Airport property along the trail provides a view of short grass enclosed by a chain link fence, several low-rise buildings, and parking areas for aircraft and automobiles.

The Crystal MAC Conservation Area is a conservation and storm water retention area on the east edge of Airport property. The Conservation Area consists of emergent and forested wetlands and some upland habitat. The City of Crystal also maintains limited park facilities within this area, including a walking trail and boardwalk through the wetland. The City, in a joint effort with the Three Rivers Park District, made improvements to the boardwalk and added a learning station along this path in 2018.

The Crystal MAC Conservation Area is outside of all departure and approach surfaces, as well as noise contours of 65 DNL or higher. The area is forested, making views of the Airport minimal, except for views of low-rise hangars and an Airport access road from the baseball field adjoining the wildlife area.

Edgewood Park is a neighborhood park in the City of Brooklyn Park. The park property is approximately 3.3 acres and includes a small playground and a wooded area. The north, south, and west sides of the park are bordered by roads; single-family homes border the remaining property boundaries. The playground is situated on the northern side of the site, and picnic areas line the northern edge of the wooded area. A wetland complex associated with Twin Creek on the south side of the park property is wooded.

Edgewood Park is located approximately 2,000 feet from the Runway 14L end along its extended centerline. The park is currently located within JAZB safety zones A and B which designate acceptable land uses and height limits for structures and trees. The safety zones are discussed in more detail in Section 4.10 of this document. There are no views of the Airport from the playground or picnic areas due

⁴ Metropolitan Council, <https://metrocouncil.org/Parks/Publications-And-Resources/PARK-USE-REPORTS/2016-Annual-Use-Estimate-of-the-Regional-Parks-Sys.aspx>

to its distance from the Airport and the visual screen provided by trees located both north and south of 63rd Avenue North. The park is outside the existing 65 DNL noise contour.

4.6.3 Environmental Consequences

The no-action alternative will involve tree removal or trimming in areas surrounding the Airport, including Edgewood Park. Several cottonwood trees are projected to become obstructions to the threshold siting surfaces (TSS) because of the faster than average growth rate and taller than average maximum heights of this species. No other impacts to the surrounding 4(f) properties will occur under the no-action alternative.

The preferred alternative will not disturb the Crystal MAC Conservation Area. There are no proposed construction activities on the east side of Airport property. The runway protection zones (RPZs) for all runways, as well as projected changes in noise contours, are situated outside the boundaries of the Conservation Area. The forested visual barrier between the park and the Airport will remain. Access to the Conservation Area will remain unchanged.

Development associated with the preferred alternatives are located closer to the Crystal Lakes Regional Trail. Expansion of the paved FBO apron will come within 20 feet of the trail. Changes to the length of turf Runway 6R/24L will remove the trail from the Runway 6R RPZ, while the Runway 6L RPZs will remain in their current positions. After the adjustments to the airfield, the trail will remain outside of both the 65 DNL and 60 DNL noise contours. While these project components will be situated close to the trail, they will not impact the trail's exposure to noise or visual impacts of Airport operations. The expansion of the apron near the trail is consistent with other paved development adjoining the trail, including the existing vehicle parking lot located within 30 feet of the trail next to the proposed apron expansion. Land cover directly east of the trail will not be changed and will remain primarily short grasses. Access to the trail will remain unchanged.

Because of the minimal impacts described above, the preferred alternative will not constitute a use of the Crystal Lakes Regional Trail and the Crystal MAC Conservation Area. The settings of the parklands are projected to remain in the same condition regarding land cover, visual environment, and noise levels as they would with the no-action alternative. The preferred alternatives will not impair the usefulness or accessibility of the Crystal Lakes Regional Trail or the Crystal MAC Conservation Area in terms of their recreational purpose and will not be detrimental to the public interest.

One element of the proposed project at Crystal Airport is shifting primary Runway 14/32 northwest by 115 feet. As discussed in Section 4.3.2, trees in Edgewood Park are expected to penetrate the proposed Runway 14 approach TSS sooner in the preferred alternative scenario than in the no-action alternative. Several trees within the park will need to be removed for the preferred alternative; however, the same trees are likely to penetrate the existing TSS at a later date under the no-action alternative. The clearance of the proposed TSS above the ground in the park varies from approximately 82 feet closest to 63rd Avenue North, to approximately 115 feet on the northwest side. The existing TSS is approximately six feet higher than the proposed TSS because the origin of the TSS will shift to the northwest approximately

115 feet with the Runway 14 landing threshold under the proposed action. Some of the trees are in an area listed on the National Wetlands Inventory (NWI) mapping tool as a forested/shrub wetland.

The proposed project is also expected to require revisions to the Airport's zoning ordinance. Based on the forecast safety zones associated with the proposed project, the entirety of Edgewood Park will be within Safety Zone A following project completion, whereas only the portion of the park south of the playground is currently in Safety Zone A. Safety Zone A typically prohibits buildings, temporary structures, and land uses that bring together an assembly of people. However, non-spectator outdoor recreation is permitted in Safety Zone A under the Airport's current zoning ordinance; for more information on local zoning ordinances, see Section 4.10.1 of this document. The park is projected to remain outside of both the 65 DNL and 60 DNL noise contours.

A certified arborist from Mead & Hunt, Inc., assessed the species, health, and maturity of trees in Edgewood Park during a field survey on October 3, 2018. The arborist assessed the maturity of the trees based on measurements of trunk diameter and a visual estimate of each tree's height. Location data was mapped for approximately 300 trees representing the larger and more mature trees, while hundreds of smaller trees were observed in the southern portion of the park but were not individually mapped. Light detection and range (LiDAR) information was also collected via airborne remote sensing in September 2018 to provide accurate height information for the tree canopy and specific individual trees in the park. The proposed action will require removal of approximately 32 trees in the southern portion of Edgewood Park, as these trees are expected to become penetrations to the approach TSS for the proposed relocated Runway 14 end. None of these trees currently penetrate the proposed Runway 14 approach TSS, but they all currently reach a height less than 10 feet below the TSS. All trees proposed for removal are cottonwoods, which is the only tree species that is expected to cause ongoing approach issues in the park given their taller than average mature height and their distance approximately 2,000 feet from the proposed Runway 14 end.

Cottonwood is a tall, fast growing species adapted to wet sites. The growth rate of cottonwood trees is much faster and more variable than any of the other species identified. They are rarely purposefully planted in street or residential settings. Their undesirable characteristics are not offset by attractive traits like showy fall color. They seed by wind and will sprout up on any wet site that is not mowed regularly. The seeds they produce are undesirable in residential settings as they regularly clog air conditioners and downspouts. Cottonwoods contribute only minimally to wildlife habitat. They provide some structure for songbirds but produce no edible fruit. They sprout vigorously after pruning, producing weak branches, so removal is the only option that should be considered for obstruction mitigation.

Nearly all cottonwood trees proposed for removal are in the southeast corner of the park. Most of these trees are between 80 and 90 feet tall, with a diameter between 15 and 30 inches. Larger cottonwoods proposed for removal are located further north and west and range from 85 feet tall to a maximum of 97 feet tall, with a diameter between 25 and 50 inches. The shorter cottonwoods proposed for removal are in upland areas with a ground surface elevation of approximately 869 to 870 feet above mean sea level (MSL). The taller cottonwoods are in lower areas between 865 and 868 feet MSL near the wetland area at the center of the wooded portion of the park.

The LiDAR height data indicate that the current maximum height of cottonwood trees in upland areas further from the wetland is about 90 feet, while trees in lower areas near the wetland grow more massive but only marginally taller, with no trees observed with heights greater than 100 feet. According to the *Textbook of Dendrology* by Harlow, Harrar, Hardin, and White, the average mature height for a cottonwood is 100 feet, although they do grow taller in some instances.

Approximately 70 additional cottonwood trees were identified that currently reach a height between 10 and 20 feet below the TSS. These trees range in height from 83 to 95 feet tall. If in the future these trees were to grow to the average mature height of 100 feet noted above, none of them will penetrate the proposed TSS given their current distance below the surface. Therefore, the potential future obstruction status of these trees is uncertain, and the MAC proposes to monitor the height of these trees following project implementation rather than remove them as part of the proposed action.

None of the purposefully planted trees surrounding the playground and picnic area in the northern portion of the park are expected to penetrate the proposed TSS, nor will any of the Boxelder or Siberian elm trees located in the isolated wooded area in the northeast corner of the park.

De Minimis Determination

According to the FAA's 1050.1F Desk Reference, and the FHWA's July 20, 2012 Section 4(f) policy paper, if the proposed project will not adversely affect the activities, features, or attributes qualifying a park for protection under Section 4(f), the FAA may make a *de minimis* determination about the use of a Section 4(f) property. To make a *de minimis* determination, the NEPA documentation needs to support the finding that there is no adverse effect to the activities, features, and attributes of the resource. This finding may consider mitigation measures.

A *de minimis* determination requires:

- Public involvement: The FAA must provide an opportunity for public review and comment. This can be concurrent with the public comment period for the Draft EA/EAW.
- Agency coordination: Officials with jurisdiction over the property (City of Brooklyn Park) must be informed of the intent to make a *de minimis* determination. After the opportunity for public comment, the City must concur in writing that the project will not adversely affect the activities, features, or attributes that make the property eligible for Section 4(f) protection.

A Section 4(f) Evaluation report was developed as part of this EA/EAW and is included in **Appendix D**. This Section 4(f) report was made available for public review and comment concurrent with the Draft EA/EAW document. During development of the Section 4(f) Evaluation, the project proposer (MAC) met on several occasions with the official(s) with jurisdiction over the Section 4(f) property (the City of Brooklyn Park). The MAC also met with responsible federal agency (FAA) staff on several occasions. Coordination included discussion of avoidance alternatives, impacts to the property, and mitigation measures. Coordination with the City of Brooklyn Park also included a discussion of the property's significance and primary use of the property. The FAA issued a Preliminary Finding on February 11, 2019, that the proposed action will not significantly affect Edgewood Park and constitutes a *de minimis*

Section 4(f) action. The City of Brooklyn Park concurred with this finding in a letter dated March 7, 2019, found in **Appendix D**.

The FAA issued a Final Section 4(f) *de minimis* finding for the proposed action following the Draft EA/EAW public comment period. After reviewing the public comment record compiled during the Draft EA/EAW comment period, the City reaffirmed its concurrence with the FAA in writing that the proposed action will not adversely affect the activities, features, or attributes that make Edgewood Park eligible for Section 4(f) protection. The Final Section 4(f) is located in the FONSI/ROD and the City concurrence letter can be found in **Appendix D**.

As described in the Section 4(f) Evaluation report, there is no acceptable alternative that meets the purpose and need for the project, minimizes impacts to other land uses and environmental resources, and avoids the need for tree removal in Edgewood Park and/or monitoring of trees for future obstruction status.

The removal of cottonwood trees and establishment of more desirable species to prevent regrowth of the cottonwoods, or establishing and maintaining turf grasses, are the only cost-effective solutions. They could be replaced with tree species which will be beneficial to the park environment and the community surrounding it. Hackberry (*Celtis occidentalis*) is an example of a species that is currently thriving on the site. This attractive tree will never grow to be an obstruction and the investment made in planting this or other desirable species will improve the public's use of the park. The cottonwoods currently on the site do little to contribute to the park environment. The cottonwood trees make the site look "forested" and provide some shade but represent long-term maintenance and safety problems. The "cotton" seeds can cover the landscape in the spring, but the bigger concern is the high potential to drop large branches as the trees age. Rot at the base of the trunks is also common. The wood is not rot resistant and tall trees can do serious damage when they fall.

Desirable trees that are currently located adjacent to the trees designated for removal will be identified prior to the start of the removal operations. Contract language will provide assurances that protect desirable trees to the extent reasonable and feasible, and to provide replacements if the desirable trees are damaged during removal operations. To avoid and minimize impacts to birds and other animals that may roost or nest in the trees during the summer months, tree removal will be completed between October and April. Tree removal during frozen ground conditions will also decrease rutting and compaction of the soil. Tree removal will be limited to that specified in project plans. Tree removal limits will be clearly indicated in the field by bright orange flagging/fencing prior to any tree clearing to ensure contractors stay within clearing limits. Tree clearing limitations will be discussed with contractors at the pre-construction meeting to ensure that they understand clearing limits and how they are marked in the field. All the wood, foliage, and other material including wood chips will be removed from the site. Where appropriate, stumps will be left in place to control erosion and herbicide will be applied to the stumps to prevent sprouting. Equipment will be cleaned and stored in established staging areas prior to, during, and following tree removal to minimize the spread of invasive plant seeds to off-site areas or other areas on-site. Removal of non-native plant species already established in tree removal areas, such as common buckthorn (*Rhamnus cathartica*), will also be considered.

Removal of the cottonwood trees will not substantially change the wooded character of the park or the available habitat types, nor will it change the wetland type or substantially alter its tree cover. Tree removal will be carefully targeted, clear-cutting stands of trees will not be required, all available measures will be taken to minimize impacts to other trees, and the MAC will replace the trees with other shorter and more suitable species for the park environment. For these reasons, the use of Edgewood Park as a neighborhood park and as a natural resource is not expected to be impaired by the proposed action.

4.7 Farmland

According to the 1050.1F Desk Reference, farmland is defined by the FAA as those agricultural areas considered important and protected by federal, state, and local regulations. Important farmlands include all pasturelands, croplands, and forests (even if zoned for development) considered to be prime, unique, or of statewide or local importance. As there are no agricultural areas within the area of study, farmlands as defined by the FAA are not applicable to, and will not be affected by, the preferred alternative or no-action alternative.

4.8 Hazardous Materials, Solid Waste, and Pollution Prevention

4.8.1 Regulatory Setting

Hazardous materials are substances or materials that have been determined to be capable of posing unreasonable risks to health, safety, and property when transported in commerce. Hazardous materials include both hazardous wastes and hazardous substances, as well as petroleum and natural gas substances and materials.

In Minnesota, treatment, storage, and disposal of hazardous waste is regulated under the Resource Conservation and Recovery Act (RCRA) and Minnesota Hazardous Waste Rules. In the Twin Cities metropolitan region, counties administer hazardous waste programs and issue hazardous waste generator licenses. In addition, any business or agency that generates, transports, or treats a non-exempt hazardous waste must receive a Hazardous Waste Identification Number (HWID) from the MPCA. This numbering system is coordinated nationwide by the U.S. EPA. Minnesota Rule 7035.0805 requires hazardous materials or items to be removed prior to the commencement of renovation or demolition, and further requires proper disposal or recycling of removed materials.

Minnesota also regulates demolition debris. Demolition debris are wastes generated when a building or structure is demolished. As defined in state law, demolition debris include concrete, brick, bituminous concrete, untreated wood, masonry, glass, trees, rock, and plastic building parts. Demolition debris must be disposed of at a permitted solid waste management facility or at a temporary “permit by rule” disposal site. Temporary disposal sites cannot accept more than 15,000 cubic yards of demolition debris.

4.8.2 Affected Environment

The project area has been an airfield since the late 1940s. MAC used the MPCA “What’s in my Neighborhood” search tool to search for sites containing hazardous materials in the project area. The study area includes Airport property and properties directly adjacent to Airport property. Several active

and closed sites were identified on and adjacent to the Airport. Full reports on these sites may be found in **Appendix E**, and their locations are illustrated on **Figure 4-6**. Most active users or generators of hazardous materials in the area are small generators related to Airport use, automobile-oriented businesses, and medical facilities adjacent to the Airport.

The cleanup sites are indicated by red symbols along with their site ID numbers on **Figure 4-6**. Site 109122 is an off-Airport site associated with multiple gasoline leaks involving groundwater contamination, occurring from 1989 to 2018, where cleanup is still ongoing. This site is adjacent to Twin Creek right before it enters Airport property via a culvert under 63rd Street North. All other cleanup sites have been closed by MPCA, meaning that further investigation, monitoring, or corrective action is not necessary. Blue symbols on the graphic show sites with permits for active hazardous waste generation or underground storage tanks.

The Airport has a Spill Prevention, Control & Countermeasure Plan (SPCC) that applies to its storage tanks. The MAC maintains above-ground storage tanks on the property containing motor oil, hydraulic fluid, and transmission fluid, as well as a 2,500-gallon underground diesel tank. Above-ground tanks are inspected for leaks monthly, and the underground tank has an electrical leak detection system. MAC oil storage locations (indoor and outdoor) are equipped with one of, or a combination of the following: double walls, containment structures, containment rooms, spill pallets, and spill kits providing secondary containment for the bulk storage containers used for oil storage. New petroleum and hazardous materials are received at the facility by truck transport. Diesel and other hazardous materials are gravity fed by hose into the appropriate tanks and containers. Tank filling is continuously monitored to reduce potential overfill or other leakage. Other users of fuel and other hazardous materials at the airport, including the FBOs with fueling facilities, provide their own spill prevention plans as required when they register as generators of hazardous materials with the State and County. Facilities for 100LL fuel are located in the south, west, and north building areas, and Jet A fuel facilities are located in the west and south building areas.

4.8.3 Environmental Consequences

The FAA has not established a significance threshold for hazardous waste, solid waste, or pollution prevention. However, the FAA 1050.1F Desk Reference offers guidance to consider whether the proposed project could:

- Violate any laws or regulation regarding hazardous waste,
- Involve a contaminated site, or if actions within a contaminated site are appropriately mitigated,
- Produce an appreciable amount of hazardous waste, or
- Generate a different quantity or type of solid waste that could exceed local capacity or use different methods of collection and disposal.

Thunderbird Aviation fueling facilities are located next to the proposed apron expansion. Design and construction of the apron expansion will carefully consider its location to avoid any potential disturbance to these facilities. Other tank sites on Airport property will not be disturbed by the proposed action.



There is an active fuel leak documented by the MPCA (Site 109122) as affecting groundwater directly across 63rd Avenue North from the proposed non-aeronautical development area. Flow of the surface water in this area enters airport property via Twin Creek to the east of the proposed non-aeronautical development area. The depth to the water table in this area is less than 10 feet below the ground surface, which means that water table aquifers are likely to be sensitive to ground-level contaminants. According to the Geologic Atlas of Hennepin County, quaternary groundwater in this area flows generally to the east, and any contamination originating north of 63rd Avenue most likely flows away from the proposed development area. If soil contamination is discovered during construction, the MAC will contact the MPCA state duty officer immediately and construction activities will be discontinued until remediation occurs.

The proposed action will not generate hazardous waste. The proposed action will produce construction debris such as dirt, concrete, and asphalt. Construction materials and other solid waste will be disposed of at a commercial landfill capable of handling disposal as required by Minnesota rules. Local disposal facilities are expected to have capacity to accept solid waste volumes that will be produced by construction and operation of the proposed action. Recycling of asphalt and fill material will be considered during project design, as practicable.

Based on the information above, there are no hazardous materials or solid waste impacts expected for either the preferred alternative or the no-action alternative. The proposed action will not interfere with any ongoing remediation of existing contaminated sites in the immediate vicinity of the project area.

4.9 Historic, Architectural, Archeological, and Cultural Resources

4.9.1 Regulatory Setting

As required by FAA regulation, Crystal Airport must comply with Section 106 of the National Historic Preservation Act of 1966 (NHPA). Section 106 of the NHPA requires federal agencies to consider effects to historic properties. Historic properties are considered those included on the National Register of Historic Places (NRHP) or those that meet one or more of the four criteria (A-D) for inclusion on the NRHP. If it is determined that no type of activity or disturbance will impact the historic property, the federal agency has no further Section 106 obligations.

4.9.2 Affected Environment

Qualified historians at Mead & Hunt conducted fieldwork for a Phase II Historic and Architectural property inventory at the Airport in 2018. Crystal Airport was previously evaluated in 2012 as part of the Bottineau Transitway (now referred to as the Blue Line) Phase I and II Architectural History Survey. The 2012 evaluation found that the Airport had importance under one of the NHRP criteria and recommended that the entire Airport property be reevaluated when the last major development at the Airport reached 50 years of age. The 2012 evaluation found the site may have “importance in the areas of community planning and development, and transportation, as an integral part of the MAC Reliever System,” and due to its potential significance as an example of a general aviation (GA) airport constructed in the post-World War II era. In 2018, the Airport was evaluated by Mead & Hunt as a component of the MAC system and

for its association with aviation in the Twin Cities metropolitan area. The possibility that the MAC reliever system as a whole was innovative was also considered.

Crystal Airport is one of six GA reliever airports established by MAC between the late 1940s and the 1970s that, along with Minneapolis-St. Paul International Airport (MSP), make up the MAC airport system. In 1949, Crystal Airport was the second GA airport added to the system, after Flying Cloud Airport (FCM). The reliever airports developed similarly from the late 1940s to the early 1970s and focused on private and small business aviation. By 1971, Crystal Airport had three paved runways and one turf runway, a terminal/administration building, several hangars, and an air traffic control tower. Flying Cloud Airport had similar facilities at this time. A portion of Flying Cloud Airport has been recognized as an eligible historic district for its significance as the first GA reliever airport within the system. Crystal Airport was the second reliever airport in the system, and there is no evidence that it was more developed than Flying Cloud Airport, or that it followed a different development path than comparable relievers within the MAC system, or influenced the development of other airports.

Historians also investigated whether the MAC system in its entirety was innovative within the context of other airport systems in Minnesota or the United States. Research did not reveal any context or corroboration that the MAC influenced other airports regionally or nationally, and revealed other regional airport systems were established in the United States prior to the development of the MAC airport system.

Buildings and Airport facilities were evaluated as potential examples of post-World War II general aviation architecture. Historians did not identify the Airport as having unusual or significant airport design for this time period. The evaluation also found that post 1970s buildings are located throughout the Airport, and many buildings constructed during the period of study have been altered from their historic appearance. See **Appendix F** for the full Phase II Historic and Architectural Survey.

On May 31, 2018, archeologists from the Mississippi Valley Archeology Center (MVAC) performed fieldwork for a Phase I archeological survey for the proposed action at Crystal Airport. MVAC performed a pre-field investigation to identify known archeological sites, reviewing records on file with the Minnesota Office of the State Archeologist. The area of potential effect (APE) for archeology includes all areas that will undergo ground disturbance because of the proposed projects. The APE consists of mowed grass on the existing airfield, and wooded areas in the future non-aeronautical development areas. The Phase I survey was completed with shovel surveys. Noticeably graded areas and ditches, a swath of lawn abutting the fueling station in the apron expansion area, and a segment of lawn with a rectangular arrangement of large, white boxes in the proposed non-aeronautical development area were not tested to avoid encountering possible underground utilities.

Shovel testing throughout the project area yielded no cultural materials other than modern asphalt, nails, glass, and shreds of fabric. No pre-contact cultural materials were discovered as a result of the survey. Much of the project area consists of disturbed and wetland soils, making the presence of surviving cultural materials unlikely. See **Appendix G** for the full archeology report.

The archeology and historic and architectural history Area of Potential Effect (APE) was defined by the limits of Airport property. Direct and indirect effects were determined to be contained on Airport property, therefore the APE was to remain on Airport property. See **Appendix F** and **Appendix G** for more information.

4.9.3 Environmental Consequences

Based on the findings above, there are no impacts to historical/architectural or archeological resources associated with either the no-action or preferred alternative. The FAA determined that a Section 106 finding of *No Historic Properties Affected* is applicable for the proposed action and submitted this finding to the Minnesota State Historic Preservation Office (SHPO) in a letter dated May 17, 2018. The SHPO concurred with the FAA finding that there are no architectural or historic properties eligible for NRHP in the project area in a letter dated June 18, 2018. In a letter to the SHPO dated June 21, 2018, the FAA reaffirmed their finding of *No Historic Properties Affected* based upon the finding of the Phase I archeological survey. The SHPO concurred with the FAA finding in a letter dated July 24, 2018.

4.10 Land Use

4.10.1 Regulatory Setting

Section 1502.16(c) of the Council on Environmental Quality (CEQ) regulations requires the discussion of possible conflicts between the proposed action and federal, state, regional, and local land use plans, policies, and controls. Where an inconsistency exists, the NEPA document should describe the extent to which the agency would reconcile its action with the plan. This section should also demonstrate the required airport sponsor's assurance under 49 U.S.C. § 47107(a)(10) that "appropriate action, including the adoption of zoning laws, has been or will be taken, to the extent reasonable," to restrict existing and planned land use next to and near the Airport to activities compatible with Airport operations.

An EAW should give a basic understanding of past, current, and proposed land use and zoning near the proposed project area and discuss the land use effects of any impacts on other resource categories. The MEPA document should also identify any potential conflicts between the project, land use plans, and zoning ordinances, especially as they relate to the "environment," which the rules implementing MEPA define generally as "physical conditions existing in the area that may be affected by a proposed project."

Local Zoning Ordinances

Each of the Cities surrounding the Airport have enacted zoning ordinances that define permitted land use on or near the Airport.

City of Crystal

Districts surrounding the Airport are predominantly zoned as Low Density Residential (R1). A small number of Commercial District (C) parcels occur around Airport property along Bottineau Boulevard and Bass Lake Road.

Airport property within the City of Crystal is zoned as an Airport District, in which the Airport is the principal permitted use. Additions to existing buildings and construction of new buildings on Airport property are permitted if they comply with the standards established in the City's unified development code. Airport facilities within the city must also follow these guidelines:

- Adequate controls, such as fencing, shall be provided to prevent unauthorized access onto Airport property;
- Buildings and uses shall be subordinate to the operation of the Crystal Airport; and
- Buildings or structures shall comply with all federal and state statutes, regulations, rules, laws, restrictions, guidance and directives and MAC rules and regulations concerning aeronautical safety and operation within the Crystal Airport and runway protection zones.

Regarding airspace protection, City Code requires notice be provided to the FAA prior to construction or alteration of any structure more than 200 feet in height, or greater in height than the imaginary surface extending outward and upward at a slope of 100:1 for 20,000 feet from the nearest point of the nearest runway at the Crystal Airport. These requirements are identical to Federal Aviation Regulations (FAR) Part 77 notice requirements for new construction or alteration to existing structures.

City of Brooklyn Park

Brooklyn Park zoning indicates a Business Park (BP) district along 63rd Avenue North, north of the Airport. The same street abuts a Multiple Family Residential (2.5 and 3 story) (R6) district which allows multifamily dwellings with buildings up to three stories; Townhouse (R4A) and Single and Attached Two Family (R4) Districts; and a Neighborhood Retail Business District (B2). A Single-Family Residential District (R3) adjoins the northwest corner of the Airport. Brooklyn Park has designated the Airport property as a Public Institution District. This district does not explicitly allow airports as a permitted or conditional use, but it does allow government buildings or facilities and accessory structures related to their use.

City of Brooklyn Center

The areas in Brooklyn Center adjacent to Airport property are all residential districts. All are within the One Family Residence District (R1), apart from an area of Multiple Family Residence (R5) next to the MAC Conservation Area which allows buildings of up to three stories. Regarding airspace, Brooklyn Center prohibits communications towers from being higher than that allowed by the Crystal Airport Safety Zones.

FAA Land Use Guidance

Land use regulations near airports typically focus on safety for airport users and the surrounding community, along with minimizing negative impacts such as noise disturbance, and zoning regulations generally discourage or prohibit land use that is incompatible with airports. The authority to enact zoning codes lies at the local level. However, the FAA offers guidance documents and grants that fund airport planning and land use studies. Notably, the FAA also requires agreement to written grant assurances from airport sponsors prior to providing federal funding for airport improvements. This includes an assurance "that appropriate action, including the adoption of zoning laws, has been or will be taken, to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations."

Specific guidance offered by the FAA concerns land uses within the runway protection zone (RPZ). An RPZ is a trapezoidal shaped area beyond a runway end with the purpose of protecting pilots as well as individuals and property on the ground. The size of this zone is determined by the design of the runway, the types of aircraft most frequently using the runway, and the visibility minimums for runway instrument approach procedures. The preferred alternative RPZs for Crystal Airport are depicted in **Figure 4-7**.

FAA Advisory Circular (AC) 150/5300-13A, *Airport Design*, states that, “It is desirable to clear the entire RPZ of all above-ground objects. Where this is impractical, airport owners, at a minimum, should maintain the RPZ clear of all facilities supporting incompatible activities.” On September 27, 2012, the FAA Office of Airports (ARP) issued the memorandum *Interim Guidance on Land Uses Within a Runway Protection Zone*, which further clarifies incompatible land uses. Consultation with the FAA is required when there are new or changed uses planned within an RPZ, or a planned change to an RPZ size or location. Land uses planned within an RPZ that require FAA consultation include:

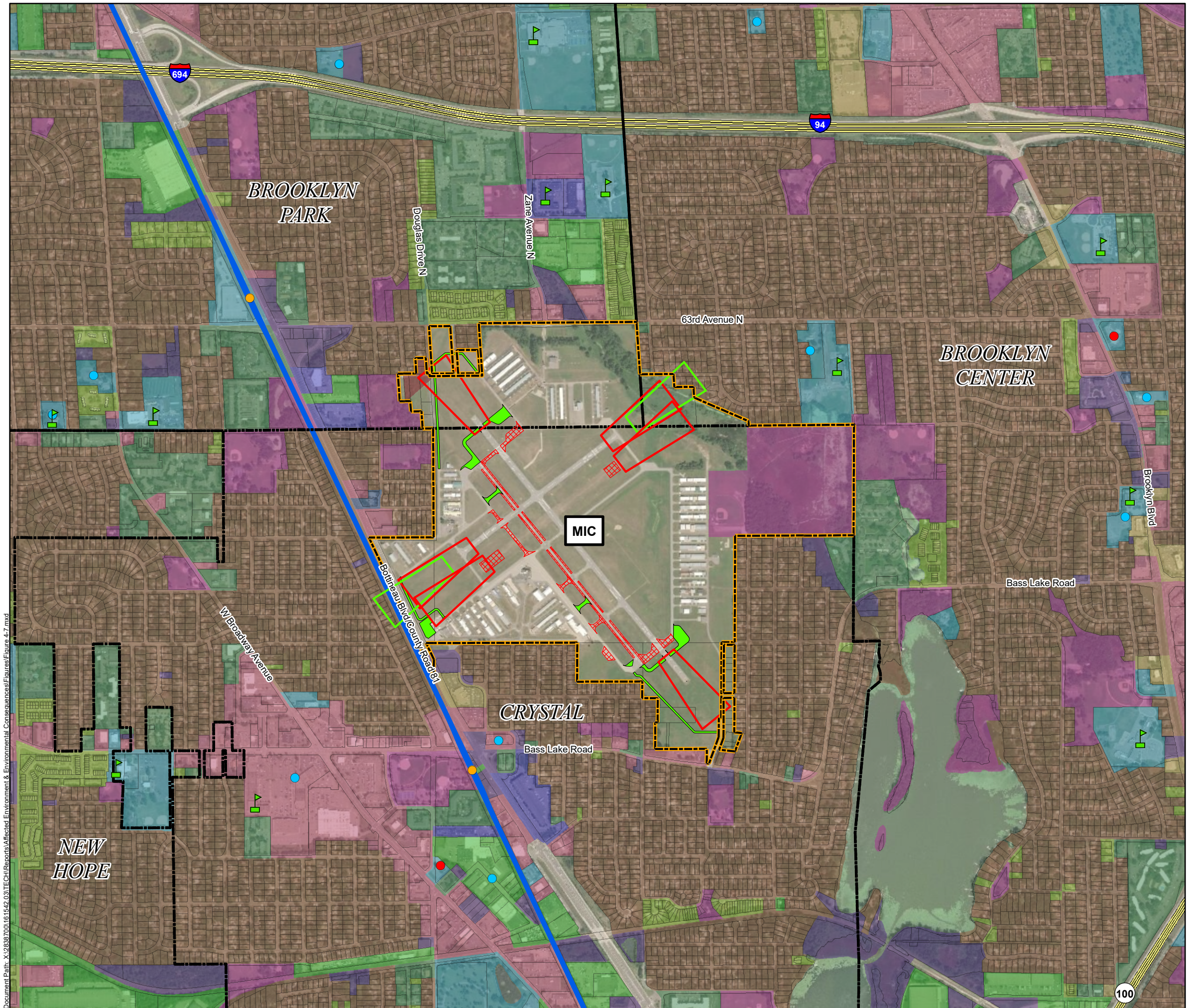
- Buildings and structures
- Recreational land uses
- Transportation facilities
- Fuel storage facilities
- Hazardous material storage
- Wastewater treatment facilities
- Above-ground utility infrastructure, including solar panel installations.

An RPZ Alternative Analysis was completed for this project and is discussed further in Section 4.10.2 of this document.

State of Minnesota Land Use Guidance and Joint Airport Zoning Board

The State of Minnesota, in Minnesota Rules 8800.2400, requires a minimum standard for airport zoning regarding “airspace, land use safety, and noise sensitivity.” The MAC is authorized by Minnesota Statute § 473.608, subd 17, to “adopt ordinances it deems necessary for the management and operations of its system of airports.” Because the Airport and the corresponding hazard area spans several cities, Minnesota Statute 360.063 also authorizes a joint airport zoning board (JAZB) to enact zoning ordinances. A JAZB with representatives from Crystal, Brooklyn Park, Brooklyn Center, New Hope, Minneapolis, Robbinsdale, and the MAC adopted Airport zoning for Crystal Airport in 1983. The ordinance adopted by the JAZB is largely based upon the minimum standards set by the state, and established Safety Zones A, B, and C. The Safety Zones around the Airport are restricted as follows:

- Safety Zone A may not have buildings, temporary structures, exposed transmission lines, or any other above ground hazard. Land uses may not bring together an assembly of people. Permitted uses are agriculture, horticulture, animal husbandry, wildlife habitat, non-spectator outdoor recreation, cemeteries, and parking.
- Safety Zone B requires building sites to be a minimum of three acres containing one building plot, and a site population density of no more than 15 people per acre. Several uses are prohibited in this zone, including churches, hospitals, schools, theaters, stadiums, hotels, motels, trailer courts, camp grounds, and other places of public assembly.

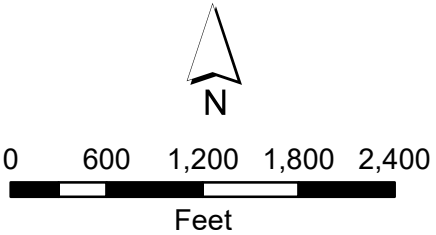


Legend

- Airport Property
- Proposed Approach RPZ
- Proposed Departure RPZ
- Planned Transitway Stations
- Fire Station
- School
- Place of Worship
- City Boundaries
- Planned Blue Line Extension LRT

Land Use

- Agricultural
- Industrial and Utility
- Industrial: Mixed Use
- Institutional
- Office
- Park, Recreational, or Preserve
- Residential: Mixed Use
- Residential: Multifamily
- Residential: Single Family Attached
- Residential: Single Family Detached
- Retail and Other Commercial
- Undeveloped



Hennepin County, MN - GIS Data Downloads at <https://gis-hennepin.opendata.arcgis.com/>

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

FIGURE 4-7
Land Use
Crystal Airport
Environmental Assessment

- Safety Zone C is subject to height restrictions and prohibits use that would interfere with operations or visibility for the Airport.

However, the above restrictions exempted preexisting residential development. In the current condition, approximately 125 privately owned parcels are in or partially within Safety Zone A, and 277 are within Safety Zone B. The JAZB safety zone overlay is shown in **Figure 4-8**. More details regarding parcels within the JAZB safety zones are provided in Section 4.10.3 of this document.

4.10.2 Affected Environment

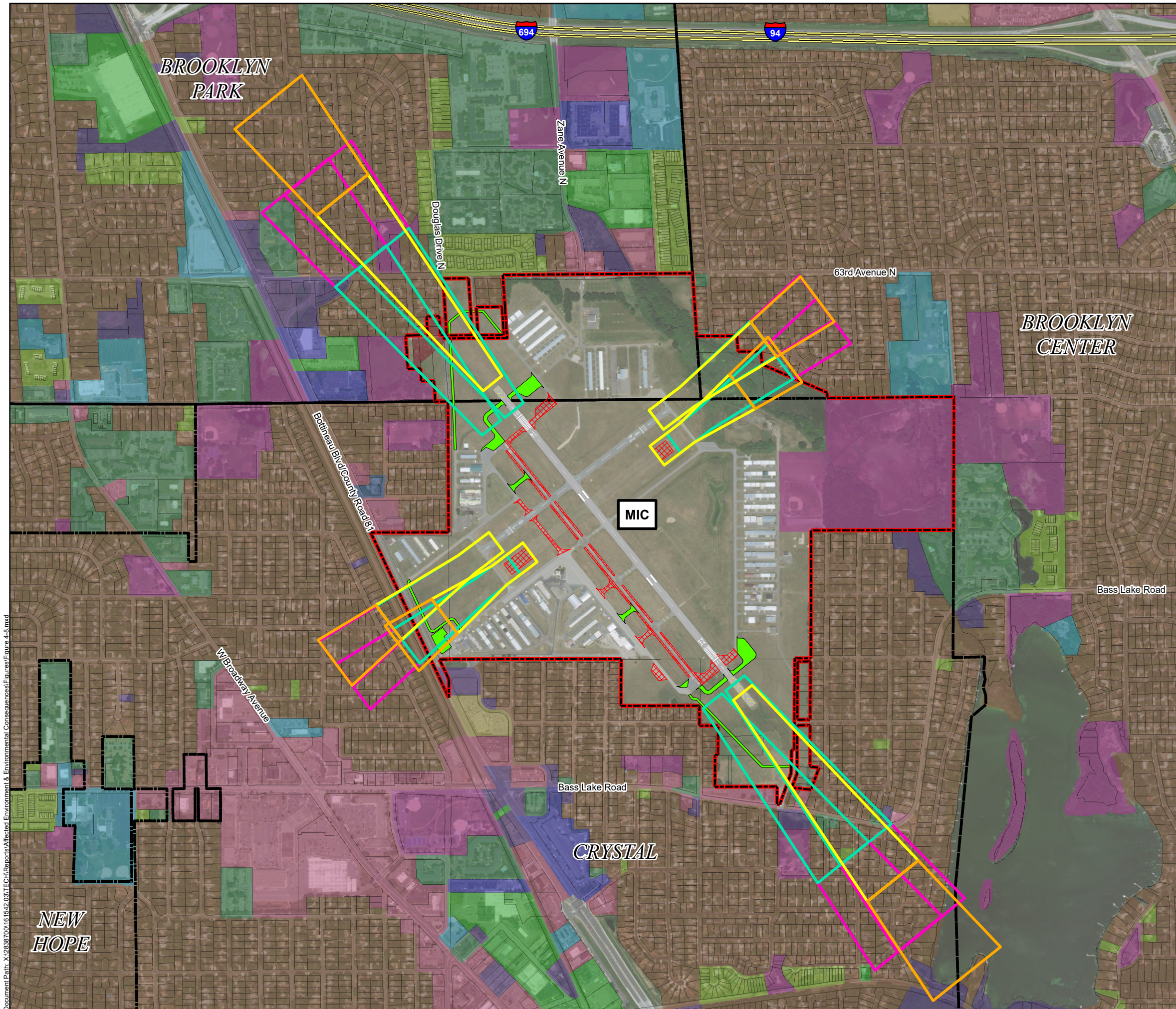
Existing Land Use

The Airport consists of a 436-acre site partially within the city limits of Crystal, Brooklyn Park, and Brooklyn Center. Existing on-Airport land use includes Airport facilities such as hangars, runways, taxiways, aircraft parking aprons, and fixed base operator (FBO) facilities. Other land cover on Airport property consists primarily of short grasses, along with some wooded areas with wetlands on the northern perimeter. The MAC Conservation Area lies outside the perimeter fence on the east side of the property and is adjacent to a youth baseball field. There is a community garden on the west side of the property, across Douglas Drive North. The areas surrounding the site are fully developed urban districts that were primarily built up between the 1950s and 1980s. Existing generalized land use near the Airport is illustrated in **Figures 4-7** and **4-8**. A study area of an approximately one-mile radius around the Airport was used to analyze land use.

Residential: Residential properties are located close to the Airport in all cities that border the site. Neighborhoods consisting of detached single-family homes are the primary land use in the surrounding area. An area of townhomes is situated north of the Airport in Brooklyn Park, and multifamily developments are also found nearby. The largest multifamily area nearby is situated approximately one-quarter mile north of the Airport between 64th Avenue North and Interstate 94/694, and includes The Willows apartments, a 724-unit complex. Crystal and Brooklyn Center have smaller multifamily concentrations within one-half mile of the Airport along Bass Lake Road, Bottineau Boulevard, and Broadway Avenue.

Commercial: Retail and commercial areas can be found in pockets on the north, west, and south sides of the Airport. Several auto-oriented businesses and a small grocery store are situated along 63rd Avenue North. Another small commercial area adjacent to the west side of Airport property includes a hotel and restaurant within 1,000 feet of the Runway 06L end. A handful of commercial properties are located along the southern perimeter of the Airport, and two of the properties, a liquor store, and Veterans of Foreign Wars (VFW) Post 494, are currently within the JAZB safety zones for existing Runways 32L and 32R. A larger and more established commercial and retail district is situated to the southwest along Bass Lake Road where it intersects with Bottineau Boulevard and West Broadway Avenue, within one-half mile of the Airport.

Industrial: Bottineau Boulevard hosts intermittent industrial uses along its corridor, including light manufacturing and distribution facilities.



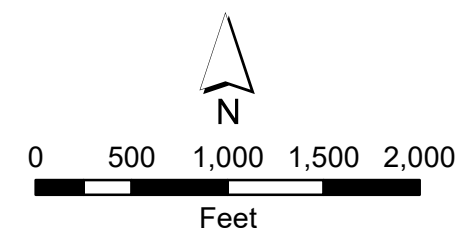
Legend

- Forecast Safety Zone A
- Forecast Safety Zone B
- Existing Safety Zone A
- Existing Safety Zone B
- Airport Property
- City Boundaries

Land Use Data

- Agricultural
- Industrial and Utility
- Industrial: Mixed Use
- Institutional
- Office
- Park, Recreational, or Preserve
- Residential: Mixed Use
- Residential: Multifamily
- Residential: Single Family Attached
- Residential: Single Family Detached
- Retail and Other Commercial
- Undeveloped

Note:
The sizes, shapes, and/or locations of the forecast state safety zones may be revised by the Joint Airport Zoning Board during an update of the Zoning Ordinance.



Hennepin County, MN - GIS Data Downloads at <https://gis-hennepin.opendata.arcgis.com/>

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

FIGURE 4-8
Existing/Future Airport Safety Zones
Crystal Airport
Environmental Assessment

Public Facilities

Airport zoning codes often restrict public gathering places in runway approach and departure paths. Several facilities near the Airport are open for use by the public. Existing and planned public facilities near the Airport are illustrated in **Figure 4-7**.

Parks and Open Space: There are several city and regional parks close to the Airport. This includes the MAC Conservation Area on the east side of Airport property, the community garden on the northwest side of Airport property, and the Crystal Lakes Regional Trail that crosses Airport property next to Bottineau Boulevard. There are two city parks bordering the Airport to the west, Southbrook Park and Skyway Park. Edgewood Park is situated across 63rd Avenue North to the northwest and lies within Safety Zone A for Runway 14L. Twin Oaks Park is just south of the Airport across Bass Lake Road and lies partially within Safety Zone A for Runway 32R. Other city parks and recreational facilities in the vicinity include North Lions Park, Becker Park, New Hope Village Golf Course, North Bass Lake Park, Lakeland Park, Northport Park, Kylawn Park, and the Eugene H. Hagel Arboretum.

Transportation: A six-lane county highway, Bottineau Boulevard (County Road 81), and a BNSF freight rail corridor are situated near the western edge of Airport property. A Metro Transit Park & Ride facility is located on the northwest corner of Bottineau Boulevard and 63rd Avenue North in Brooklyn Park. Limited Stop and Express bus routes stop along 63rd Avenue North and local bus service is provided along Bass Lake Road at the Airport's southern boundary.

Schools: Several schools are located within the one-mile study area radius of Crystal Airport, none of which are within Safety Zones A or B. These schools include:

- Fair Oaks Elementary and Excell Academy charter school, approximately one-third mile north of the Airport.
- North View Junior High School, approximately two-thirds mile north of the Airport.
- Zanewood Community School, approximately one mile north of the Airport.
- NomPeng Academy, approximately one mile northeast of the Airport.
- Prairie Seeds Academy, approximately two-thirds mile west of the Airport.
- Saint Raphael Catholic School, approximately three-fourths mile southwest of the Airport.
- Northport Elementary, approximately one mile east of the Airport.

Medical: An urgent care clinic facility is located directly south of the Airport along Bottineau Boulevard, but is outside of Safety Zone A or B.

Places of Worship: Numerous places of worship are situated within one mile of the Airport, none of which are within Safety Zones A or B. These places of worship include:

- The Church in Brooklyn Park
- First Lutheran Church
- St. Raphael's Church
- Cross of Glory Lutheran Church
- Unity Temple Church of God

- All Nations Christian Fellowship
- Brooklyn Lutheran Church
- North Center Baptist Church
- Imam Husain Islamic Center

Fire Departments: A West Metro Fire-Rescue station is located approximately one-half mile south of the Airport on West Broadway. The Brooklyn Center Fire Station West is also approximately one mile east of the Airport.

Planned Public Facilities: In addition to existing public facilities described above, there is a planned light rail transit line on the west side of the Airport, with two stations nearby.

Planned Land Use

Each of the cities surrounding Crystal Airport has a comprehensive plan that directs future land use near the Airport.

Crystal: Crystal's draft 2040 comprehensive plan includes a description of land uses permitted according to the 1983 Joint Airport Zoning Ordinance, discussed further in Section 4.10.1 of this EA/EAW. The draft comprehensive plan also discusses the Crystal Airport preferred alternative scenario and related noise impacts, which are discussed further in Section 4.12.3 of this EA/EAW.

The City's stated aviation related policies are:

- Notify the FAA in accordance with CFR Part 77, using the FAA Form 7460-1 "Notice of Proposed Construction or Alteration". This requirement is currently located in Crystal's unified development code.
- Continue to protect airspace in accordance with the 1983 Joint Airport Zoning Ordinance, as amended.
- If MAC proposes non-aeronautical uses on part of the airport site, the city will consider such Comprehensive Plan amendments, zoning map revisions and conditional use permits in accordance with the city's normal exercise of its land use authority for such uses.

Crystal's draft 2040 plan shows future commercial land use for several currently undeveloped parcels near the intersection of Bass Lake Road and Bottineau Boulevard, indicating that this area may show growth and development in the future.

Brooklyn Park: The draft 2040 comprehensive plan shows a mix of employment centers, medium and high-density housing, and single-family homes near the Airport. The area directly across from Airport property surrounding Twin Creek near 63rd Avenue North and Zane Avenue has been designated as a focus of redevelopment. The draft comprehensive plan discusses airport related height limits and proposes review of development near the Airport to allow for appropriate clearance. The 2040 plan also addresses sensitive land uses in relation to airport noise, and references coordination with the MAC regarding the preferred alternative from the MIC 2035 LTCP. In addition, Brooklyn Park's 2040 plan

anticipates development of Airport property for non-aeronautical uses and notes that it will exert zoning authority over these uses.

Brooklyn Center: The Brooklyn Center 2030 comprehensive plan shows no planned land use changes on or near Airport property.

Blue Line Extension: A Metro Transit light rail Blue Line extension is planned parallel to the existing BNSF freight rail line, as of the January 2017 proposed alignment for the project. Near the Airport, stations are planned at the intersection of Bottineau Boulevard and 63rd Avenue North, and at the intersection of Bottineau Boulevard and Bass Lake Road. Metro Transit has planned a new Park and Ride facility near the Bass Lake Road station.

The City of Crystal, Hennepin County, and Metro Transit finalized a station area plan for the Bass Lake Road facility in July 2016. Planners identified several properties as opportunity sites for transit-oriented development, including additional multi-family residential and commercial uses. The Transit Oriented Development Overlay (TD) established in the station area plan encompasses the southwestern corner of the Airport. The exact specifications of the TD district are not yet listed in Crystal's city ordinances. At the same time Brooklyn Park, the County, and Metro Transit conducted station area planning for the intersection of Bottineau Boulevard and 63rd Avenue North. There are fewer proposals for short-term growth associated with this station, but one commercial/industrial site was identified as a long-range redevelopment opportunity for high density residential use.

Incompatible Land Use in RPZ

Runway 14L/32R has runway protection zones (RPZs) beginning 200 feet beyond the runway ends with dimensions of 500' x 1,000' x 700'. All other runways have RPZs beginning 200 feet beyond the runway end with dimensions of 250' x 1,000', x 450'. Runway 06L/24R also has separate approach RPZs beginning 200 feet from the displaced landing thresholds with the same dimensions. The existing RPZ locations are shown in **Figure 4-3** and the proposed RPZ locations are shown in **Figure 4-7**.

The Runway 14L and 14R RPZs extend over Douglas Drive. The Runway 32R and 32L RPZs extend over four residential parcels adjacent to Airport property. The Runway 06L and 06R RPZs extend over County Road 81 (Bottineau Boulevard), a freight rail line (BNSF), a planned passenger light rail transit line (Blue Line), and seven residential parcels southwest of these transportation corridors. The Runway 24R departure RPZ extends over ten residential parcels and part of 62nd Avenue. The Runway 24L RPZ is located entirely on Airport property. Existing nonconforming land uses in the RPZs are listed below.

- Runways 14L and 14R
 - Approximately 625 feet of Douglas Drive
- Runways 32L and 32R
 - Three residential parcels
 - Portion of VFW parking lot
 - Non-public Airport access road
- Runway 06L and 06R
 - Seven residential parcels

- Approximately 750 feet of Bottineau Boulevard (County Road 81)
 - Approximately 435 feet of freight rail line (BNSF)
 - Future LRT facility
- Runway 24L and 24R
 - Ten residential parcels
 - Approximately 270 feet of 62nd Avenue North

Blue Line LRT facilities are likely to involve an electrified overhead catenary system (OCS), which will be within the Runway 06L departure RPZ. The FAA approved this nonconforming use in the RPZ in 2014 and issued a letter of no objection, which was referenced in the Blue Line Environmental Impact Statement (EIS).

4.10.3 Environmental Consequences

The FAA has not established a significance threshold for land use, or factors to consider when determining significance of a project's effect on land use. This is because significant land use impacts typically result from consequences in other impact categories, such as noise or socioeconomic impacts. Analysis of these impact categories is found in the associated sections.

The proposed action will shift Runway 14L/32R northwest approximately 115 feet and decommission Runway 14R/32L. This will not significantly change flight traffic patterns and impacts to surrounding land uses.

Nonconforming Uses in RPZs

The proposed action will result in changes in incompatible uses in the RPZs off Airport property. Future RPZ locations are illustrated in **Figure 4-7**. Shifting Runway 14/32 approximately 115 feet to the northwest and designating it as a utility runway will result in relocating the Runway 32 RPZ entirely onto Airport property. The proposed Runway 14 RPZ will contain approximately 280 feet of Douglas Drive, but no residential parcels. Decommissioning Runway 14R/32L and converting it to a parallel taxiway will eliminate its RPZs. In addition, Runway 6R/24L will be shortened as part of the proposed action, which will result in the elimination of its RPZ conflicts with Bottineau Boulevard and Lakeland Avenue. However, the timing of the proposed project will result in the RPZ temporarily including a portion of the existing apron containing three aircraft tie-downs until the apron is expanded and aircraft parking is relocated outside of the RPZ. The proposed project will remove a total of three residential parcels from the RPZs and reduce the length of public roadways within these zones. Changes in nonconforming uses in the RPZs at Crystal Airport are summarized in **Table 4-7** on the next page.

The MAC submitted an RPZ Alternatives Analysis to the FAA addressing the portion of Douglas Drive North in the Runway 14 RPZ and the aircraft tie-downs on the apron in the Runway 6R RPZ. In a letter dated May 8, 2018, the FAA concurred with the findings and approved these uses in the ultimate RPZs. This concurrence is subject to the MAC working with the City of Brooklyn Park to consider installation of "Low Flying Aircraft/No Parking" signage on Douglas Drive North where it is located within the RPZ. See **Appendix H** for the RPZ Alternatives Analysis and FAA concurrence letter.

Table 4-7: Nonconforming Land Use in RPZs		
Runway End	Existing	Proposed
14L	<ul style="list-style-type: none"> Douglas Drive North 	<ul style="list-style-type: none"> Douglas Drive North Future non-public Airport service road
14R	<ul style="list-style-type: none"> Douglas Drive North 	None: decommissioned
32L	<ul style="list-style-type: none"> VFW parking lot 	None: decommissioned
32R	<ul style="list-style-type: none"> 3 residential parcels Non-public Airport access road 	<ul style="list-style-type: none"> Non-public Airport access road
06L	<ul style="list-style-type: none"> 7 residential parcels Bottineau Boulevard, Lakeland Avenue, BNSF rail 	<ul style="list-style-type: none"> 7 residential parcels Bottineau Boulevard, Lakeland Avenue, BNSF rail, future Blue Line
06R	<ul style="list-style-type: none"> Bottineau Boulevard, Lakeland Avenue, FBO apron 	<ul style="list-style-type: none"> FBO apron (temporary)
24L	None	None
24R	<ul style="list-style-type: none"> 10 residential parcels 62nd Avenue North 	<ul style="list-style-type: none"> 10 residential parcels 62nd Avenue North

JAZB Safety Zones

The proposed action will also result in changes to the number of private properties that fall within the forecast JAZB safety zones. Existing zoning is based upon the current location of the runways. The MAC will convene a JAZB comprised of representatives from local jurisdictions affected by the proposed zoning changes. As described in Section 4.10.1, there are currently many privately-owned parcels within these zones, most of which are exempt from JAZB zoning because they are in Established Residential Neighborhoods. The extent of the off-Airport safety zones will be reduced due to decommissioning Runway 14R/32L and shortening 06R/24L, as well as re-categorizing all runways as utility runways, which will result in narrower future zones. However, due to the lengthened and shifted Runway 14L/32R, the zones will include new parcels to the northwest and southeast of the existing zones. The existing and forecast safety zones are shown in **Figure 4-8**. The forecast zones shown in Figure 4-8 are based on the state's model zoning ordinance. The JAZB zoning process will consider public input and may result in a zoning ordinance recommendation to the MnDOT Office of Aeronautics that deviates from the state's model zoning ordinance and from the forecast safety zones shown in Figure 4-8.

There are expected to be fewer privately-owned parcels within the safety zones with the preferred alternative than under the existing ordinance. Under the no-action alternative, approximately 125 privately-owned parcels are in or partially within Safety Zone A and 277 are in or partially within Safety Zone B. Under the preferred alternative, the number of privately-owned parcels within or partially within these zones is expected to be reduced to approximately 143 within forecast Safety Zone A and 204 within forecast Safety Zone B.

Table 4-8: Privately-Owned Parcels within Safety Zones				
	Current Ordinance		Forecast JAZB Ordinance	
	Safety Zone A	Safety Zone B	Safety Zone A	Safety Zone B
Runway 14L and 14R ends	39	67	50	70
Runway 32R and 32L ends	65	96	76	43
Runway 6L and 6R ends	9	54	7	43
Runway 24R and 24L ends	12	60	10	48
Total	125	277	143	204

Note: Where parcels fall partially within both Safety Zone A and Safety Zone B, they are counted in both totals.

Non-Aeronautical Zoning

The proposed action includes the development of an area on the north side of Airport property for non-aeronautical use. This may require rezoning, a variance, or a conditional use permit from the City of Brooklyn Park to allow non-airport or non-public institution uses in this area.

Transportation

The preferred alternative is not expected to generate significant additional vehicle traffic when compared to the no-action alternative. The proposed non-aeronautical development on the north side of the Airport will likely contribute minor additional traffic generation. The EQB EAW Guidelines published October 2013 indicate that for projects with only minor traffic impacts, generation of a maximum peak hour traffic estimate is not necessary. Therefore, such an estimate is not required and was not developed for this EA/EAW.

The EQB EAW Guidelines also state that when there is no reason to expect new or worsened traffic congestion, or if the parking capacity of the site is fewer than 2,000 parking spaces, a detailed air quality analysis for vehicle emissions is not required. The guidelines note that “if the peak hour traffic generated by the project exceeds 250 vehicles or the total daily trips exceeds 2,500, a traffic impact study must be prepared as part of the EAW.” The proposed action will not result in traffic in excess of these numbers, therefore a traffic impact study is not required and was not developed for this EA/EAW.

Conclusion

Land use impacts associated with the proposed action will not be significant based upon the factors described above. The preferred alternative reduces incompatible uses within the RPZs and JAZB safety zones when compared to the no-action alternative.

4.11 Natural Resources and Energy Supply

4.11.1 Regulatory Setting

The CEQ regulations implementing NEPA at 40 C.F.R. § 1502.16(e)-(f) require consideration of a proposed project’s energy requirements and natural resource requirements in NEPA documents. Airport construction projects often change an airport’s demand on local energy and natural resource supplies. The following impact categories should be included in an EA/EAW, as needed:

- Impacts of the proposed action on local electric, gas, and water utilities;
- Construction material required for the proposed action, and its availability from local suppliers; and
- Impact of the proposed action on aircraft and ground vehicle fuel use.

4.11.2 Affected Environment

The study area for natural resources and energy supply was limited to Airport property. Aeronautical facilities affected by the preferred alternative do not consume natural gas or water. Existing incandescent runway and taxiway lighting systems on the airfield require electricity supply. These systems include medium intensity runway edge lights, threshold lights, and visual glide slope indicator lights on Runways 06L/24R and 14L/32R; runway end identifier lights on Runway 14L/32R; and medium intensity taxiway edge lights on Taxiways A and E. These systems consist of approximately 210 light fixtures which require approximately 110,000 kilowatt hours (kWh) of electricity to operate annually.

4.11.3 Environmental Consequences

According to FAA Order 1050.1F, “the FAA has not established a significance threshold for natural resources and energy supply; however, the FAA has identified a factor to consider when evaluating the context and intensity of potential environmental impacts for natural resources and energy supply.” This factor “includes, but is not limited to, situations in which the proposed action . . . would have the potential to cause demand to exceed available or future supplies of these resources. For most actions, changes in energy demands or other natural resource consumption for FAA projects will not result in significant impacts.”

The preferred alternative will increase the number runway and taxiway light fixtures from 210 to approximately 285 given the reconfiguration of the runways and taxiways. If light units to be added are incandescent, the annual electricity requirements of airfield lighting systems are expected to increase approximately 35 percent to 150,000 kWh per year. However, energy-efficient light-emitting diode (LED) fixtures were recently approved by FAA for all existing and planned airfield lighting systems considered by the preferred alternative. If LED fixtures were to be installed instead of incandescent fixtures for all airfield lighting systems, the annual electricity needs are expected to decrease approximately 70 percent to 40,000 kWh per year. This difference in electricity consumption will inform consideration of specific light systems at the time of project design.

Consumption of energy and natural resources during the construction phase of the proposed action will consist mainly of construction machinery fuel and construction materials. This consumption will not exceed locally available supplies, and some construction materials may be recyclable. Efforts will be made during design to identify opportunities for recycling pavements and underlying base material. Estimated quantities of required construction materials include 11,720 tons of bituminous pavement, 9,610 cubic yards of crushed aggregate base course, 3,050 gallons of bituminous tack coat, and 6,540 linear feet of preassembled silt fence. Other required materials include topsoil, seeding mixtures, fertilizer, soil stabilizer, light fixtures, airfield signs, and painted/reflective pavement markings.

Significant increases in aircraft operations are not expected as a result of the preferred alternative, as the 2035 LTCP operations forecasts between the base case scenario (no-action alternative) and the

extended runway scenario (preferred alternative) differ by less than 350 operations in the 20-year planning period.

Operation and maintenance of the proposed improvements are expected to require minor increases in energy demand. No significant increases in aircraft or ground vehicle fuel usage are expected under the preferred alternative. In addition, the minor increases in utility demand for airfield lighting and maintenance equipment under the preferred alternative are not expected to have a negative impact on local energy or natural resource supplies.

4.12 Noise and Compatible Land Use

4.12.1 Regulatory Setting

The Aviation Safety and Noise Abatement Act of 1979 directed the FAA to establish a system for measuring noise and exposure to noise, and to identify land uses compatible with different exposure levels. According to the FAA 1050.1F Desk Reference, noise is defined as unwanted sound that can disturb routine activities like sleep or conversation. Certain land uses, such as residential areas, are more sensitive to airport noise than others. In many cases, the FAA requires a noise analysis during environmental review.

The FAA Office of Environment and Energy (FAA-AEE) recognizes that the environmental consequences stemming from aircraft operations – primarily noise, emissions, and fuel consumption – are highly interdependent and occur simultaneously throughout all phases of flight. The Aviation Environmental Design Tool (AEDT) is the FAA-approved software system that dynamically models aircraft performance in space and time to produce fuel burn, emissions, and noise estimates. The baseline operations count and forecast operations estimates for the no-action and preferred alternatives were used to develop noise contours, which were then used to identify expected future aircraft noise impact areas. AEDT Version 2d, the most up-to-date version of the software at the time the environmental review was initiated, was used to model the noise exposure contours. The following scenarios were evaluated:

1. Baseline – estimates noise exposure levels in 2017 for existing conditions.
2. No Action – estimates noise exposure levels in 2025 with no project.
3. Preferred Alternative – estimates noise levels in 2025 with the preferred alternative.

To estimate Baseline (2017) aircraft operations by aircraft type and assign operations to specific runway ends, MAC's consultant conducted detailed analysis of Airport-specific operations data available from both the FAA Traffic Flow Management System Counts (TFMSC) and the MAC Noise and Operations Monitoring System (MACNOMS) flight tracking system. Operations estimates for the No-Action and Preferred Alternative (2025) scenarios are based on the operations forecasts presented in the 2035 LTCP⁵. For more information regarding operational inputs to the AEDT model, see **Appendix I**.

⁵ MAC developed forecasts that differ from the FAA Terminal Area Forecasts to account for the projected differences in activity at the Airport resulting from implementation of the preferred alternative. TAF forecasts assume no action.

4.12.2 Affected Environment

The Baseline (2017) noise contours are shown in **Figure 4-9**. The contours represent the Federal Aviation Regulations (FAR) Part 150 (14 C.F.R. Part 150) yearly day-night average sound level (DNL) metric, which is measured in decibels (dB). DNL is a cumulative noise metric that represents the average daily noise level, accounting for the added intrusiveness of noise at night compared to during the day. A nighttime penalty (equivalent to increasing decibel levels by ten) for increased annoyance is added to flights occurring between 10:00pm and 7:00am. The FAA, EPA, and HUD established the 65 DNL as the threshold indicating significant cumulative noise impacts. The study area for noise impacts is the area within this contour.

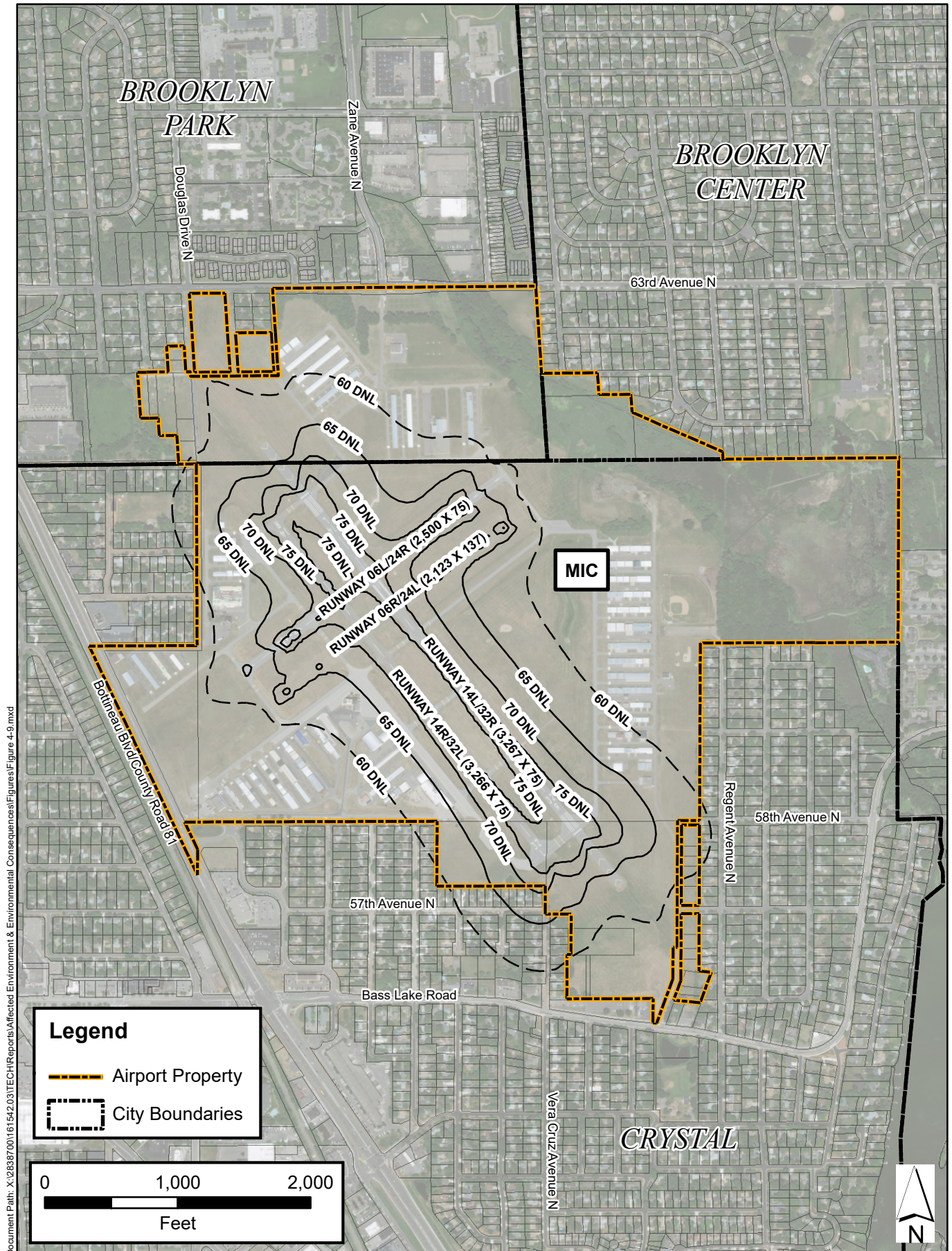
The 65 DNL contour is mostly contained on Airport property in the Baseline (2017) scenario, except for a small area south of the Airport off the Runway 32L end. Eleven residential parcels are in or partially within the 65 DNL contour in the current condition. The 70 and 75 DNL contours are contained on the Airport property. No other noise sensitive land uses are located within the study area.

4.12.3 Environmental Consequences

The FAA considers noise impacts to be significant if “the action would increase noise by DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe.” **Figure 4-10** shows noise contours for the No Action and Preferred Alternative (2025) scenarios. The year 2025 was chosen for analysis because it is expected to be five years after project implementation, which is within the recommended period of analysis according to the 1050.1 Desk Reference.

The No Action (2025) scenario shows the 65 DNL contour still mostly contained on Airport property, except for 12 residential parcels on the south side of the Airport. This scenario affects one more parcel than the Baseline scenario. The 70 and 75 DNL contours are contained on the Airport property.

The Preferred Alternative (2025) scenario shows a reduction in off-Airport noise impacts because of closing Runway 14R/32L. Residential parcels in or partially within the 65 DNL contour are projected to be reduced from eleven to four. The 65 DNL and greater contours are otherwise all contained on Airport property. There are no areas within the 65 DNL contour that will experience an increase of 1.5 dB DNL or more; therefore, there will be no significant noise impacts for the preferred alternative. The 70 and 75 DNL contours are contained on the Airport property.

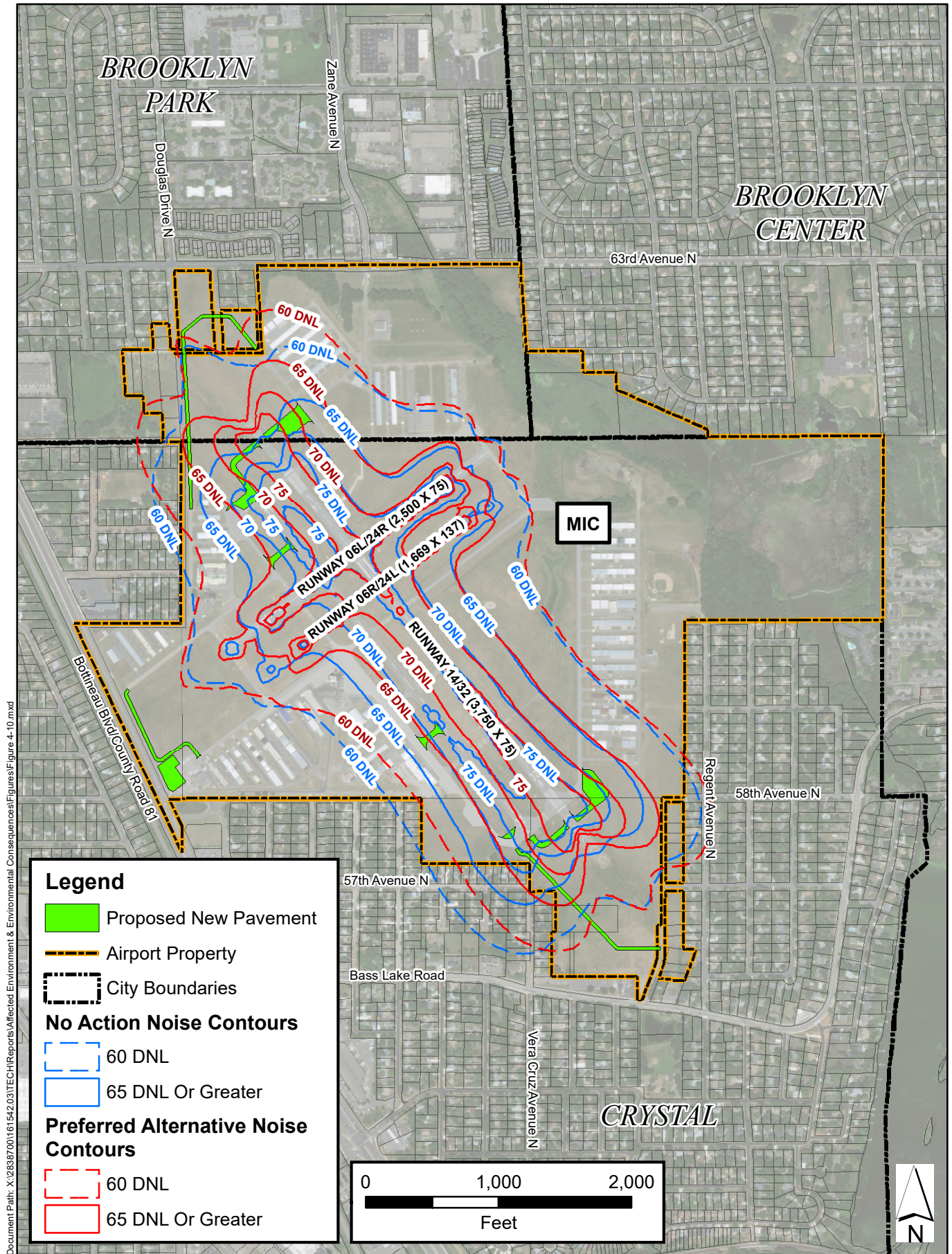


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Note: Aircraft noise contour 60 DNL is shown for informational purposes only.

FIGURE 4-9

Baseline Noise Contours
Crystal Airport
Environmental Assessment



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Note: Aircraft noise contour 60 DNL is shown for informational purposes only.

FIGURE 4-10

No Action and Preferred Alternative Noise Contours
Crystal Airport
Environmental Assessment

According to the FAA's Land Use Compatibility criteria in 14 CFR Part 150, sensitive land uses (such as residential) are considered incompatible with noise levels of 65 dB DNL or higher. The FAA requires that structures potentially eligible for sound insulation (i.e. within the 65 dB DNL noise contour) be evaluated to determine whether the interior noise levels are high enough to warrant sound insulation treatment. Structures already reducing interior noise exposure to 45 dB or less with windows closed are ineligible for sound insulation treatment. Following the completion of the EA/EAW, the MAC will test the four residences located in the 65 DNL contours around Crystal Airport in accordance with American Society of the International Association for Testing and Materials (ASTM) standards using a methodology agreed upon by the FAA, MAC, and City of Crystal.

Construction equipment noise would be temporary and would be minimized and mitigated through implementation of appropriate construction practices specified in FAA Advisory Circular (AC) 150/5370-10E, *Standards for Specifying Construction of Airports*. The MAC will also include contract provisions requiring construction noise mitigation. As a result, there will be no significant construction noise impacts for the no-action or preferred alternatives.

4.13 Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety

This section is divided into five parts: regulatory setting; affected environment; socioeconomic consequences; environmental justice consequences; and children's environmental health and safety consequences.

4.13.1 Regulatory Setting

Statutes related to socioeconomic impacts include the Uniform Relocation Assistance and Real Property Acquisitions Policy Act of 1970, the requirements of which are not triggered by the proposed action. Environmental justice, as defined by the United States Environmental Protection Agency, is the "fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. EPA has this goal for all communities and persons across this Nation." Title VI of the Civil Rights Act of 1964, Executive Orders, and other federal guidance have been issued to address environmental justice and children's environmental health and safety risks.

4.13.2 Affected Environment

The study area includes directly affected jurisdictions, Crystal, Brooklyn Park, Brooklyn Center, and Hennepin County, as compared with the wider metropolitan area. The Airport is within the limits of three cities in Hennepin County and the Minneapolis-Saint Paul-Bloomington Metropolitan Statistical Area (MSA). **Table 4-9** shows the total population of each city, the county, and the MSA, and their growth since the year 2000.

Table 4-9: Total Population					
	2000	2005	2010	2017⁶	Average Annual Growth Since 2000
MSP MSA	2,968,806	3,131,632	3,279,833	3,600,618	1.1%
Hennepin County	1,116,200	1,117,015	1,152,425	1,252,024	0.7%
Brooklyn Center	29,172	29,143	30,104	31,006	0.4%
Brooklyn Park	67,388	70,590	75,781	80,581	1.1%
Crystal	22,698	22,036	22,151	23,165	0.1%

Source: U.S. Census Bureau Annual Population Estimates, and Decennial Census

Brooklyn Park, which is located on the north side of the Airport, is an outer ring suburb of Minneapolis and the largest city in the study area in terms of both population and area. Crystal and Brooklyn Center are smaller inner ring suburbs that have experienced lower than average growth compared to the MSA. In contrast, Brooklyn Park has experienced population growth on pace with the metro area. These differences largely reflect the fact that Crystal and Brooklyn Center are fully urbanized first ring suburbs relying upon infill opportunities for growth, whereas Brooklyn Park has remaining undeveloped areas approximately four miles north of the Airport, outside of the area of impact for the proposed action.

Median owner-occupied housing values in Crystal, Brooklyn Park, and Brooklyn Center are lower than in Hennepin County and the MSA. **Table 4-10** compares these data points for the three cities, Hennepin County, and the MSA.

Table 4-10: Home Values	
Area	Median Value of Owner-Occupied Homes
MSP MSA	\$220,700
Hennepin County	\$235,800
Brooklyn Center	\$140,000
Brooklyn Park	\$159,600
Crystal	\$186,400

Source: U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates

Income and household size are useful indicators for understanding the potential sensitivity of a community to socioeconomic impacts. **Table 4-11** summarizes per capita and median household income statistics for the cities, county, and MSA. A lower per capita income level and median household income exists across all three cities when compared to county and regional levels. Slightly larger household sizes may contribute to differences in per capita income, particularly in Brooklyn Park and Brooklyn Center.

⁶ At the time of analysis, July 1, 2017 was the most recent Annual Population Estimate available for Cities and Towns.

Table 4-11: Income and Household Size			
Area	Per Capita Income	Median Household Income	Average Household Size
MSP MSA	\$36,242	\$70,915	2.55
Hennepin County	\$39,939	\$67,989	2.40
Brooklyn Center	\$22,398	\$46,400	2.77
Brooklyn Park	\$27,424	\$65,695	2.93
Crystal	\$30,096	\$60,494	2.38

Source: U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates

Note: ACS Per Capita Income does not measure interest, dividends, rent, insurance, or transfer payments.

Table 4-12 shows that the three cities have a labor force employed in a diverse range of industries. Manufacturing as a sector shows a higher proportion of workers than in Hennepin County and the metro region; therefore, activities that support this sector are particularly important in Brooklyn Center, Brooklyn Park, and Crystal. Employment in other industrial sectors are largely in line with regional averages. Additionally, unemployment over the five-year American Community Survey estimate period from 2012-2016 was slightly higher in Brooklyn Center and Brooklyn Park than in the county and MSA.

Table 4-12: Employment					
Metric	MSP MSA	Hennepin County	Brooklyn Center	Crystal	Brooklyn Park
Total employed population 16 years and over	1,877,278	666,175	14,626	12,513	39,799
Unemployment Rate	4.9%	5.1%	6.3%	4.1%	5.7%
Industry					
Agriculture, Forestry, Mining	0.9%	0.5%	0.2%	0.6%	0.4%
Construction	5.1%	3.7%	4.7%	4.3%	3.3%
Manufacturing	13.6%	11.9%	18.8%	15.3%	18.6%
Wholesale Trade	3.0%	2.9%	2.8%	3.7%	1.9%
Retail Trade	11.0%	11.2%	10.9%	10.6%	11.4%
Transportation, Warehousing, Utilities	4.6%	3.7%	4.2%	5.0%	4.4%
Information	2.0%	2.2%	2.2%	1.6%	1.3%
Finance, Insurance, Real Estate	8.6%	9.8%	7.1%	8.6%	9.5%
Professional services	11.9%	14.9%	11.0%	13.7%	11.8%
Education, Social Service, Health Care	23.2%	23.5%	22.9%	25.8%	23.9%
Arts, Entertainment, Recreation, Hospitality	8.4%	9.2%	8.7%	5.3%	6.4%
Other services	4.5%	4.3%	3.7%	4.2%	4.4%
Public Administration	3.3%	2.3%	2.6%	1.3%	2.7%

Source: U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates

Similar to the resident labor force, businesses in the cities surrounding Crystal Airport provide employment in a range of industries. Much of the employment in these cities is concentrated along major transportation corridors, including Bottineau Boulevard to the immediate west of Crystal Airport. Manufacturing, trade, professional services, and education and health are important employment sectors within Brooklyn Park and Brooklyn Center, while trade, education and health, and leisure and hospitality

are the three largest employment sectors in Crystal. The city of Crystal has the fewest jobs relative to its employed resident population, and all three cities have proportionally fewer jobs than Hennepin County and the MSP MSA when compared to their respective employed resident populations. The economic activity and employment data indicate that land uses in the three cities are largely residential and highlights the importance of roadway and transit connections for commuters in this part of the metropolitan region.

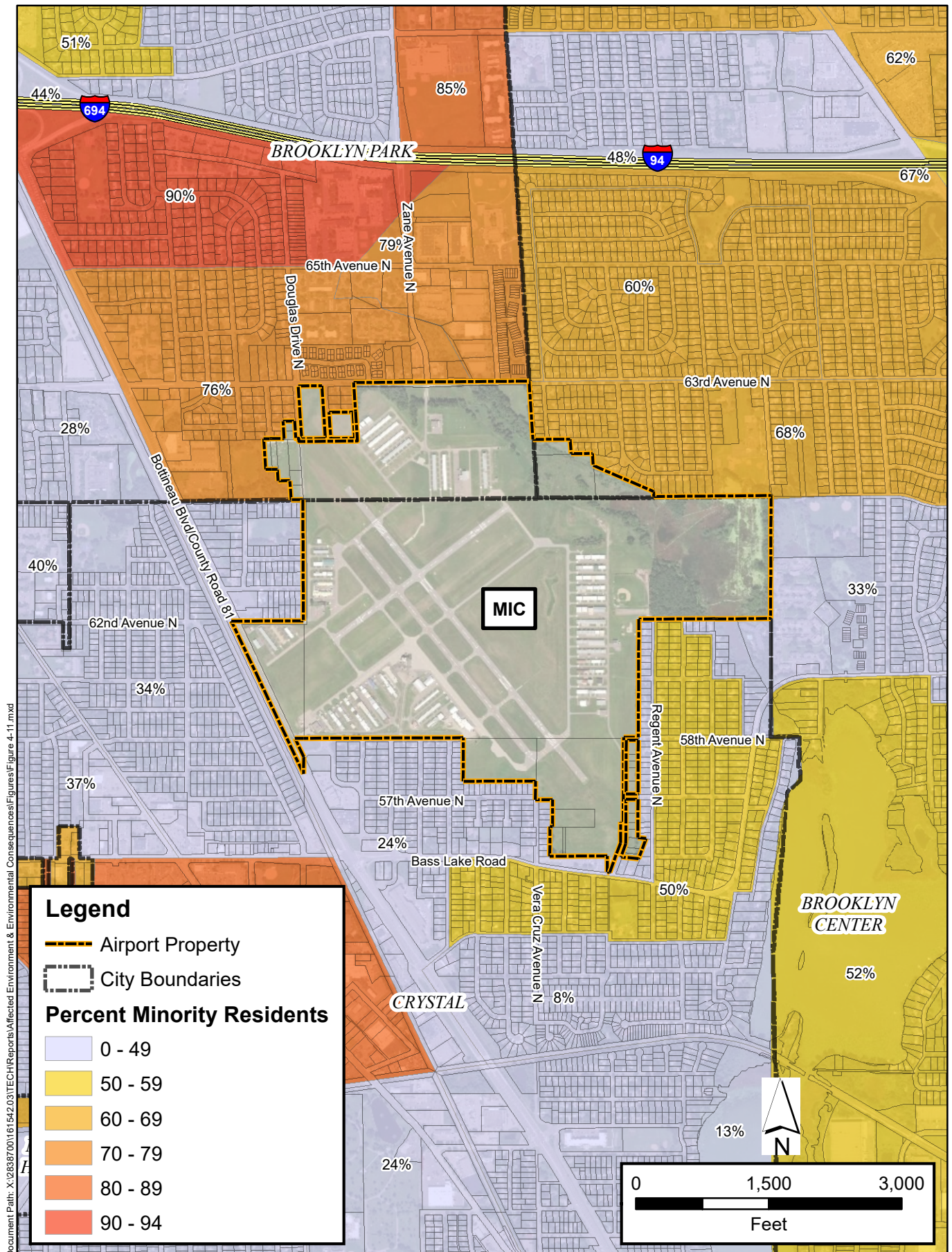
An understanding of baseline socioeconomic conditions also helps to determine whether environmental justice populations exist near Crystal Airport. Certain demographic groups often experience more exposure to environmental stressors than the general population. Executive Order 12898 defines environmental justice populations as minority populations, low-income populations, and indigenous peoples. FAA Order 1050.1F and CEQ Guidance from 1997 further define minority as, “individuals who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic.” A minority population exists if, “either (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.” Minority populations in the cities around Crystal Airport are summarized in **Table 4-13**.

Table 4-13: Population by Race					
Area	Black or African American	American Indian	Asian	Hispanic or Latino	Total Minorities
Brooklyn Center	28.21%	0.39%	14.92%	10.11%	53.63%
Brooklyn Park	26.30%	0.38%	17.95%	6.07%	50.70%
Crystal	10.25%	0.60%	3.60%	8.70%	23.15%
Hennepin County	12.26%	0.56%	6.83%	6.81%	26.46%
MSP MSA	7.63%	0.49%	6.19%	5.61%	19.91%

Source: U.S. Census Bureau 2012-2016 ACS Estimates

Brooklyn Park and Brooklyn Center are both home to minority populations that, in aggregate, make up more than 50 percent of city residents. Crystal has fewer minority residents, but the percentage of this population is higher than in the metro area as a whole. Because the environmental impacts of airports on communities can vary by location in relation to the runway ends, minority populations near Crystal Airport are illustrated in **Figure 4-11** by census block group using data from the U.S. Environmental Protection Agency (EPA) EJScreen online tool⁷.

⁷ <https://ejscreen.epa.gov/mapper/>



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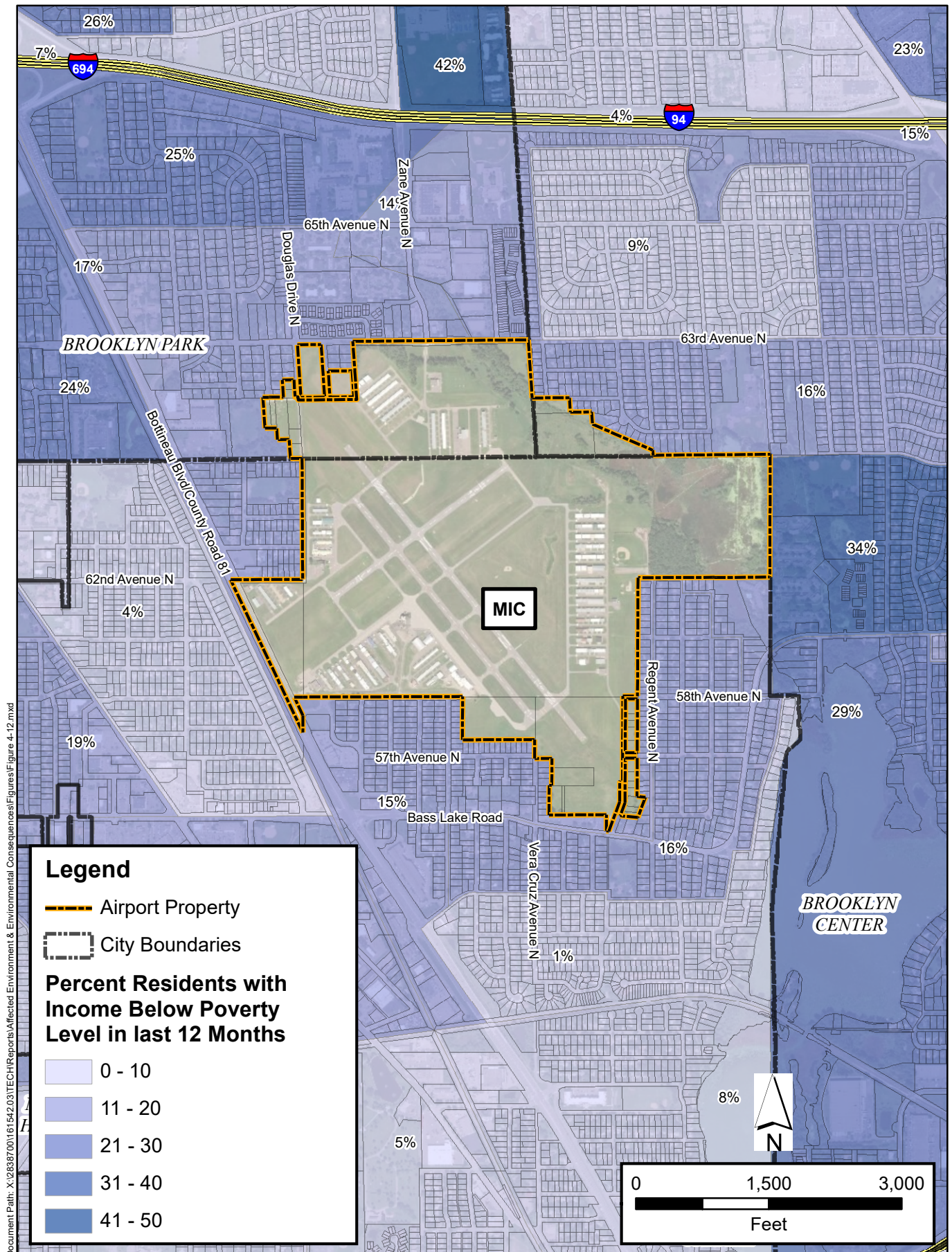
FIGURE 4-11
Minority Populations
Crystal Airport
Environmental Assessment

The area north of the Airport is home to a particularly high concentration of minority residents. In the block group directly north of Runways 14L and 14R, approximately 76 percent of the population belong to a minority group. Northwest of Runways 24L and 24R, 68 percent of residents in the closest block group are minorities, and the remaining two block groups between the Airport and Interstate 94/694 are home to 60 percent and 67 percent minority populations. The population of the two block groups closest to the south side of the Airport are made up of 24 percent and 50 percent minorities. The percentage of minority residents in these block groups are significantly higher than the percentage of minority residents in the Minneapolis-Saint Paul MSA and constitute an environmental justice population. This means that actions at the Airport must be evaluated to determine if they will lead to a “disproportionately high and adverse impact” on these populations when compared to the no-action alternative. According to FAA Order 1050.F, disproportionately high and adverse effect means a negative impact that is “predominantly borne by a minority population and/or a low-income population or will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population.”

Figure 4-12 shows low-income residents according to the 2012-2016 ACS Five Year Estimates⁸ using the percent of the population who have income lower than the Census Bureau defined poverty level for the year 2016. The concentration of low-income residents near Crystal Airport is not as high as the nearby concentrations of minority populations. A large low-income population is located in Brooklyn Park one-half mile north of the Airport, but this area is separated from the Airport by Interstate Highway 94/694 and is not directly within the runway approach or departure paths. Most census block groups directly adjacent to Airport property have 17 percent or fewer residents falling into a low-income category. One block group on the east side of the Airport is home to 34 percent low-income residents, but this area is largely separated from the Airport by the Crystal MAC Conservation Area and Upper Twin Lake.

Environmental health and safety risks may disproportionately affect children because of impacts of asthma, unintentional injuries, developmental disorders, or cancer attributable to exposure to substances in air, food, water, or soil that a child is likely to encounter. Exposure can affect children with a different intensity than it would an adult. This is because a child’s internal organs are still developing and cannot process toxins in the same way an adult can, and children are exposed to a proportionally higher amount of toxins as compared to their body weight. The north side of the Airport is adjacent to an area with a high concentration of children. In this area, block groups range from 31 percent to 35 percent children, compared to about 24.2 percent of the population within the MSA, and 22.3 percent of Hennepin County. These block groups are situated off the current Runway 14L and 14R ends, and are partially within the current Safety Zones A and B. There are several school facilities near the Airport, however, only one is within an approach area, Saint Raphael Catholic School. This preschool through eighth grade facility is situated within one mile of the Runway 06L end, but is not located within Safety Zone A or B.

⁸ <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>



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FIGURE 4-12
Low-Income Populations
Crystal Airport
Environmental Assessment

4.13.3 Environmental Consequences

Socioeconomics

The FAA has not established a significance threshold for socioeconomics, but there are factors to consider when analyzing the context and magnitude of potential impacts. These include whether the proposed action has the potential to:

- Induce substantial economic growth in an area,
- Disrupt or divide the physical arrangement of an established community,
- Cause extensive relocation,
- Disrupt traffic patterns and reduce the level of service of roads serving a surrounding community, or
- Substantially change a community's tax base.

The proposed action is not expected to significantly influence economic activity in the area, nor will it cause any relocation or disruption of the established community. Proposed non-aeronautical development on the north side of the property will increase the City of Brooklyn Park tax base, result in some new economic activity, and generate some traffic in the area. However, these impacts are not significant within the context of the activity already occurring in this fully developed urban area.

Environmental Justice

DOT Order 5610.2(a) provides the following definition for the types of adverse impacts that should be considered when analyzing the environmental justice effects of a project.

Adverse effects means the totality of significant individual or cumulative human health or environmental effects, including interrelated social and economic effects, which may include, but are not limited to: bodily impairment, infirmity, illness, or death; air, noise, and water pollution and soil contamination; destruction or disruption of man-made or natural resources; destruction or diminution of aesthetic values; destruction or disruption of community cohesion or a community's economic vitality; destruction or disruption of the availability of public and private facilities and services; vibration; adverse employment effects; displacement of persons, businesses, farms, or nonprofit organizations; increased traffic congestion, isolation, exclusion, or separation of minority or low-income individuals within a given community or from the broader community; and the denial of, reduction in, or significant delay in the receipt of, benefits of DOT programs, policies, or activities.

Disproportionately high and adverse effect means that the effect is predominantly experienced by a minority or low-income population, or that the impacts on these populations are more severe or greater in magnitude than those suffered by non-minority or non-low-income populations.

In most cases, the significance of environmental justice impacts is dependent on the significance of impacts in other environmental categories that primarily affect environmental justice populations. These categories can include noise, air and water quality, and Section 4(f) impacts, among others.

Expected socioeconomic conditions under both the no-action and preferred alternatives are comparable to baseline conditions. Resource categories do not have off-Airport impacts in most cases. Off-Airport residential parcels affected by noise (discussed further in Section 4.12) are not located in areas with high proportions of minority or low-income populations.

As discussed in Section 4.3.2, up to 49 trees located on private properties and public rights-of-way, and up to 32 trees within a city park, will need to be trimmed or removed for the preferred alternative. The 32 trees within a city park are in the Runway 14 approach and within a census block group with 76 percent minorities. This is considered an environmental justice population because it exceeds the 50 percent minority threshold established by CEQ guidance. Because removal of these trees will not substantially change the wooded character of the park and the MAC will replace them with other shorter and more suitable species for the park environment, tree removal in the park will not have a disproportionately high and adverse impact to environmental justice populations.

Of the 49 trees located on private properties and public rights-of-way:

- Twenty-three are in the Runway 14 approach and within a census block group with 76 percent minorities.
- Four are in the Runway 32 approach and within a census block group with 50 percent minorities.
- Four are in the Runway 6L approach and within a census block group with 34 percent minorities.
- Eighteen are in the Runway 24R approach and within a census block group with 68 percent minorities.

Because tree removal on private properties will be carefully targeted to individual trees, the MAC will compensate homeowners for tree removal on private properties, and suitable low-growing species will be planted in their place, tree removal on these properties will not have a disproportionately high and adverse impact to environmental justice populations.

No significant off-Airport impacts associated with the preferred alternative affect environmental justice populations.

Children's Environmental Health and Safety

In most cases, the significance of impacts to children's environmental health and safety is dependent on the significance of impacts in other environmental categories. The FAA has not established a significance threshold for this category but requires consideration of whether the proposed project will lead to disproportionate health or safety risks to children.

Expected socioeconomic conditions under both the no-action and preferred alternatives are comparable to baseline conditions, and most resource categories do not have off-Airport impacts. Off-Airport parcels affected by noise (discussed further in Section 4.12) do not include schools or playgrounds, or facilities that would otherwise be primarily accessed by children.

Under the preferred alternative, there are no significant impacts to air quality or water resources that may influence the health of the surrounding population, including children. There are no disproportionate safety risks associated with the project, which will occur entirely on fenced Airport property. While there is a larger than average proportion of children near the ultimate Runway 14 end, impacts in other resource categories in this area are not significant. No disproportionate health or safety risks to children are expected.

Conclusion

Socioeconomic, environmental justice, and children's environmental health impacts will not be significant based upon the factors discussed above.

4.14 Visual Effects

4.14.1 Regulatory Setting

Airport-related lighting facilities and activities have the potential to affect light sensitive areas such as residential neighborhoods, parks, and recreational facilities. According to FAA Order 1050.1F, light emissions analysis should consider the degree to which the proposed action has potential to create annoyance or interfere with normal activities, and to affect the visual character of the area. The MEPA EAW form requires description of any project-related visual effects such as vapor plumes or glare from intense lights; potential visual effects from the project; and any measures to avoid, minimize, or mitigate visual effects. Although there are no federal or state standards that specifically define the significance of light emissions impacts, the location of lighting systems, brief descriptions of the purpose and characteristics of the lighting systems, and proposed measures to lessen annoyance should be included in an EA/EAW.

4.14.2 Affected Environment

The study area includes Airport property and directly adjacent properties. Primary Runway 14L/32R and crosswind Runway 06L/24R are currently lighted with medium intensity runway edge lighting (MIRL). In addition, Runway 14L/32R has runway end identifier lights (REIL) on each end. The Runway 32R end and both ends of Runway 06L/24R currently have visual approach slope indicators (VASI), a system of lights that provide visual guidance during the approach. Runway 14L end has precision approach path indicator (PAPI) lights, which convey similar information. Runway edge lights define the edge of usable pavement, and REIL provide positive identification of the runway end at night and in inclement weather. Runway edge lights, PAPI, and VASI lights are continuously burning, while REIL are synchronized flashing lights. Runway edge lights emit light in all directions, while the VASI, PAPI, and REIL lights are aimed into the approach area beyond the end of the runway. VASI and PAPI lights are aimed upward and outward along the extended runway centerline, while the REILs are aimed upward and at 15-degree lateral angles from the extended centerline. The runway lights are pre-set to low intensity during nighttime hours. Radio control offers pilots the choice to increase them to medium intensity.

4.14.3 Environmental Consequences

The FAA has not established a significance threshold for visual effects, but the EA/EAW should consider the context and intensity of lighting emissions and other visual impacts.

The proposed action will result in changes to airfield lighting due to the relocation and extension of Runway 14L/32R and the associated parallel taxiway. The proposed action will extend existing medium intensity runway edge lighting (MIRL) systems along the edges of the relocated and extended runway pavement. New taxiway edge lighting will be installed on the parallel taxiway and associated connections to the primary runway. The proposed action will shift the REILs along with the Runway 14L/32R extension; however, the REILs will be located adjacent to the displaced thresholds and therefore will be near their existing locations. The VASI on Runway 32R end will be replaced with a PAPI.

The new distance from the Runway 14L end to the property boundary will be approximately 1,100 feet, compared to a current distance of approximately 1,400 feet. The neighboring use of the property is residential, and most residences have little visual screening. When the tower is closed, the MIRL, PAPI/VASI, and REIL can be remotely activated by pilots via radio, so these systems need only be in full effect when in use by approaching and departing aircraft, which only occurs during low visibility conditions or at night. The LTCP operations forecast and noise analysis estimated approximately five percent of operations occurred at night in the base year 2017, or fewer than 10 operations per night. Options for improving visual screening include constructing berms along the property boundary near the affected properties or using solid fencing in some areas. Methods for visual screening will be considered during project design for the residential properties near the new runway end points.

New airport lighting systems will be similar in type and location to the existing airport lighting systems and will only be in full effect when in use by approaching and departing aircraft. Based on the information above, there are no significant visual effects associated with the preferred alternative or no-action alternative.

4.15 Water Resources

This section is divided into five parts: surface waters and stormwater; floodplains; groundwater; wetlands; and wastewater.

4.15.1 Surface Waters and Stormwater

Regulatory Setting

The Clean Water Act was established to “restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” The Clean Water Act allows states to adopt water quality standards. Minnesota has done so under Chapter 7050 of Minnesota Rules, which is administered by the Minnesota Pollution Control Agency (MPCA). These standards assign beneficial uses, known as designated uses, for every water body. Minnesota waters are to be protected as well as their assigned designated uses, whether for drinking water, recreation, fish consumption, or aquatic life. Not only do water quality standards establish designated uses, they also establish criteria which must be met within the bodies of

water, so water quality is maintained to support their designated uses. So-called “impaired waters” are any bodies of water that do not meet water quality standards or fully support the waterbody’s beneficial use. Section 303(d) of the Clean Water Act requires states to assess and list impaired waters and establish priority ranking by considering the water’s uses and pollutant levels.

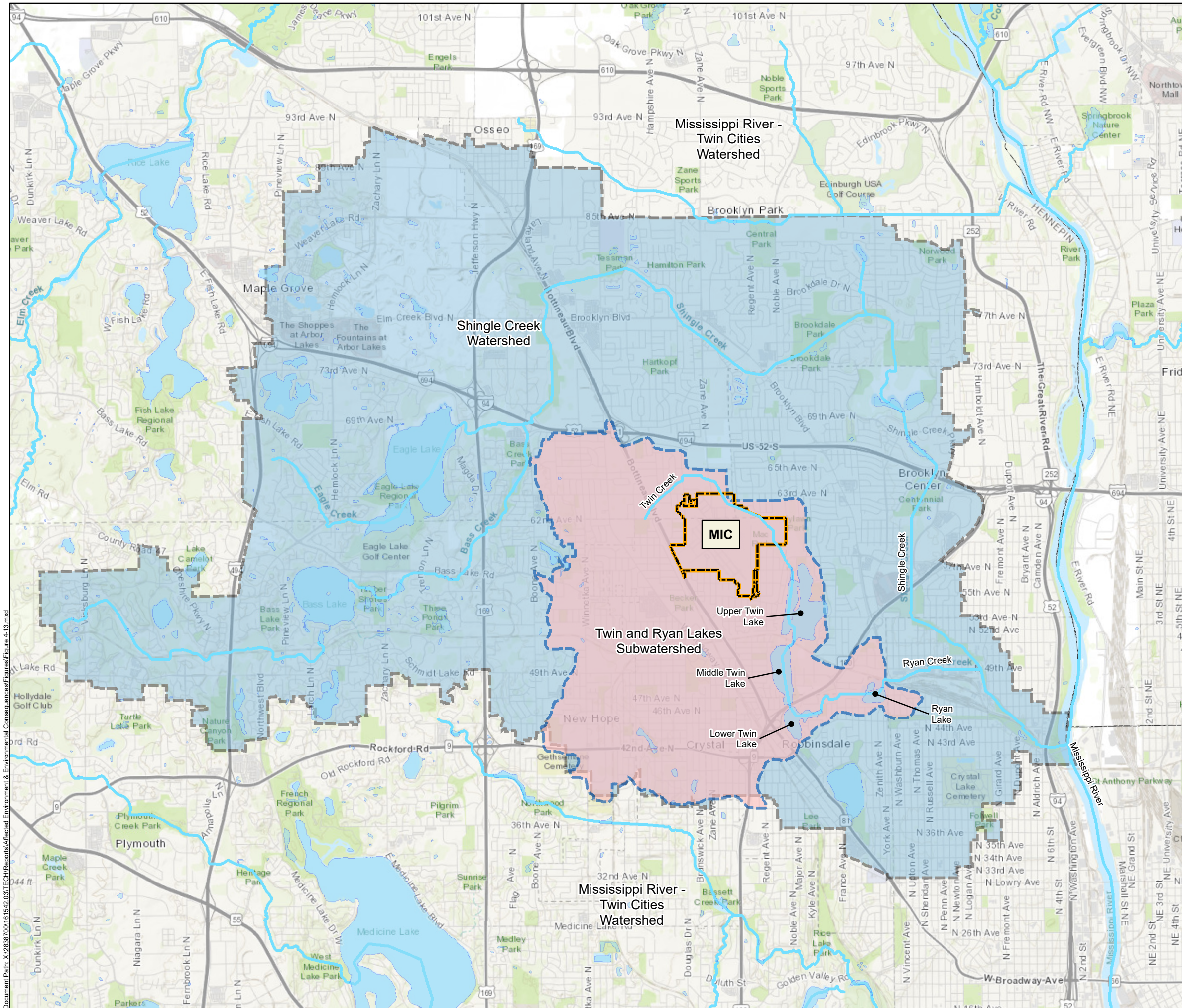
The Metropolitan Surface Water Management Act of 1982 requires all land in the Twin Cities Metropolitan Area to be divided into watershed districts, with each watershed to be overseen by a Watershed Management Organization. The Shingle Creek Watershed Management Commission (SCWMC), formed in 1984, is responsible for preserving and using natural water storage and retention in the Shingle Creek watershed to meet Surface Water Management Act goals. The SCWMC jurisdiction, shown in **Figure 4-13**, covers 44.5 square miles and includes parts of Brooklyn Center, Brooklyn Park, Crystal, Maple Grove, Minneapolis, New Hope, Osseo, Plymouth, and Robbinsdale.

The Airport is located within and subject to the stormwater management requirements of the SCWMC. Rule D of the Commission Rules and Standards requires that projects over 5 acres in size be reviewed by the Commission, and meet Commission rate, quality, and volume requirements for the entire site. The SCWMC must also review plans of any land development or individual site development adjacent to or within a lake, wetland, or a natural or altered watercourse as listed in the public waters and wetlands inventory for Hennepin County. The proposed non-aeronautical development area is adjacent to Twin Creek, a stream designated by the DNR as a public water. Minnesota Statute 103F.48 requires a 50-foot buffer along watercourses and waterbodies shown in the MDNR Public Waters Inventory (PWI).

The Minnesota Public Waters Work Permit Program, administered by the MDNR, regulates water development activities below the ordinary high-water level in public waters and public waters wetlands, as identified on MNDNR maps. Regulated activities include filling, excavation, culverts, dredging, and other construction activities.

The Airport requires a General Industrial Stormwater Permit (General Permit) issued by the MPCA under the National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS). The General Permit satisfies the stormwater discharge provisions of the federal Clean Water Act. The MPCA sets the NPDES permit rules. A requirement of the General Permit is to develop a stormwater pollution prevention plan (SWPPP). This plan contains benchmarking requirements, methods, and management practices to prevent contaminated runoff from entering surface and ground water. The SWPPP describes pollution prevention steps associated with activities like pavement deicing, pavement maintenance, and equipment fueling that have the potential to impact stormwater. The Crystal Airport SWPPP notes that two Airport tenants, North of Sixty Flying, Inc. and Thunderbird Aviation, Inc., will develop or have developed their own SWPPPs.

An NPDES/SDS permit for construction activity is also required for activities disturbing one acre or more of soil. Permittees are required to control runoff from construction sites and develop a construction SWPPP that includes erosion prevention and sediment control best management practices (BMPs). Sites within one mile of impaired waters need to meet additional requirements.



Legend

- Airport Property
- Twin and Ryan Lakes Subwatershed
- Shingle Creek Watershed

0 5,000 10,000
Feet

N

Shingle Creek Watershed Management Commissions - <http://www.shinglecreek.org/>

Minnesota Department of Natural Resources - MNDNR Watershed Suite <https://gisdata.mn.gov/dataset/geos-dnr-watersheds>

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

FIGURE 4-13
Watershed Districts
Crystal Airport
Environmental Assessment

The cities where the Airport is located are all municipal separate storm sewer system (MS4) permit holders under the NPDES. MS4 permits are designed to reduce the amount of sediment and pollution that enters surface and ground water from municipal storm sewer systems to the maximum extent possible. All three cities require compliance with NPDES construction permit conditions, and control discharges into city stormwater systems that may contain pollution. City of Crystal code 735.21 mandates that, “The owner or operator of a commercial or industrial establishment shall provide, at their own expense, reasonable protection from accidental discharge of prohibited materials or other wastes into the municipal storm drain system or watercourses through the use of structural and non-structural BMPs, as adopted or provided by the city.” City of Brooklyn Park code 104.12, and City of Brooklyn Center code Section 4-404 Subsection 10 mandate similar BMPs to prevent accidental discharge.

The three cities also require stormwater management facilities for land disturbance or development activity. Crystal city code 520.17 Subdivision 6 requires that two-year, ten-year, and 100-year storm peak discharge rates before the proposed development shall not be increased, and that accelerated channel erosion will not occur as a result of the proposed land disturbing or development activity. Brooklyn Park has similar requirements.

The Cities of Brooklyn Park and Crystal require applicants for subdivision approval, conditional use permits, and grading permits to submit a stormwater management plan. Proposed plans must incorporate volume control, water quality control, and rate control, and be in conformance with the MS4 permit and SCWMC standards. Post-construction runoff from new impervious surfaces must be retained on-site for one inch of runoff. Water quality treatment should result in no net increase of total phosphorous and total suspended solids from pre-project conditions. City of Brooklyn Park Ordinance 153.07 states that the following stormwater management practices shall be investigated in descending order of preference:

1. Natural infiltration of precipitation on-site
2. Flow attenuation by use of open vegetated swales and natural depressions
3. Green infrastructure by use of rain gardens, bioswales, constructed wetlands, and other constructed infiltration practices
4. Stormwater retention facilities
5. Stormwater detention facilities

FAA AC 150/5200-33B, *Hazardous Wildlife Attractants on or Near Airports*, discourages wet detention (a stormwater management pond with permanent standing water) on airports because of wildlife attractant potential. However, stormwater detention for control of flow released may be considered if the ponds may be drawn down within 48 hours.

Wild and scenic rivers are not present on or near Crystal Airport, and therefore the Wild and Scenic River Act is not applicable to, and will not be affected by, the no-action or preferred alternatives.

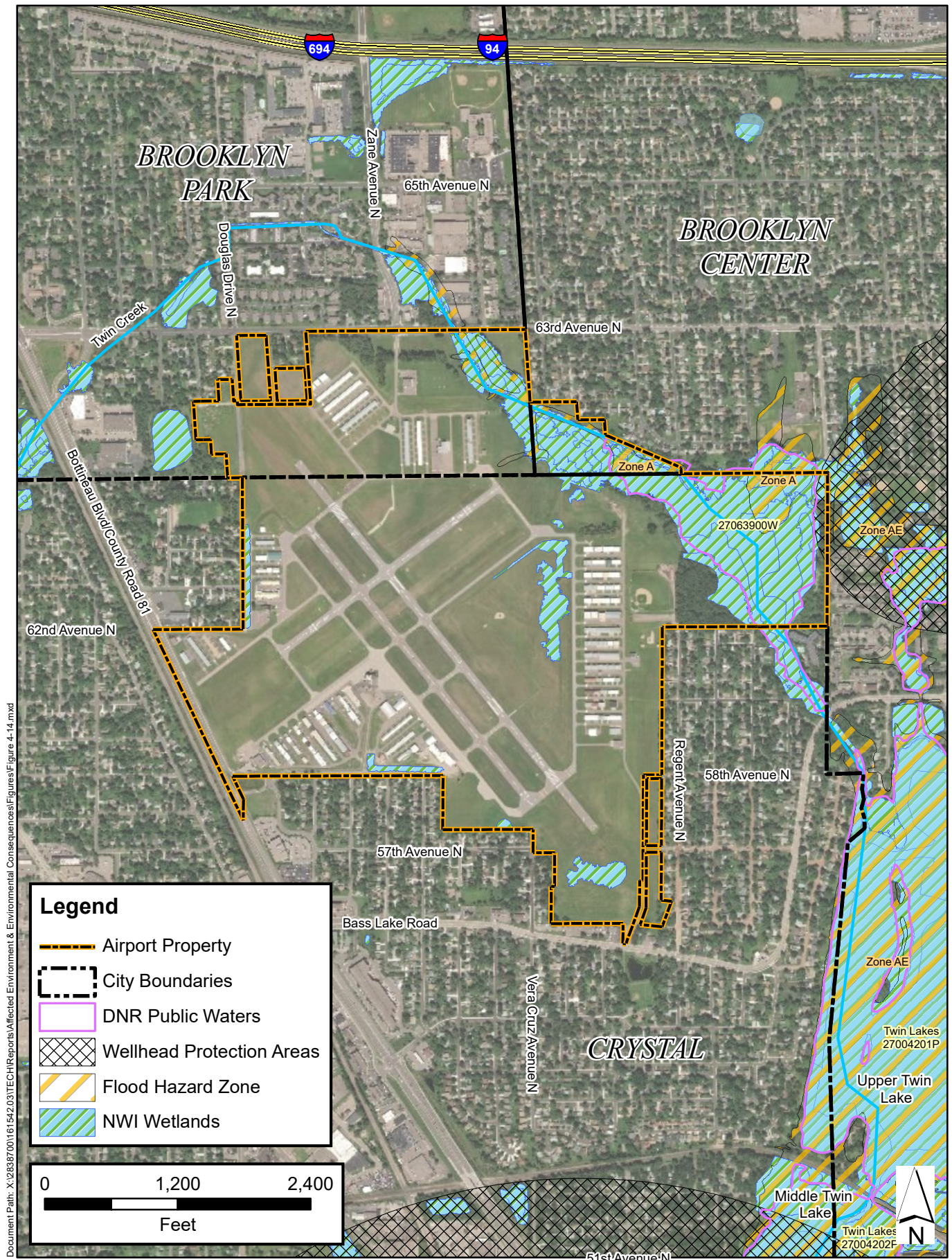
Affected Environment

Surface waters on and surrounding the Airport are shown in **Figure 4-14**. Crystal Airport is located within the Mississippi River–Twin Cities watershed, which encompasses 1,027 square miles in portions of Hennepin, Anoka, Ramsey, Washington, Dakota, Carver, and Sherburne counties. The entire Airport is within the Shingle Creek Watershed, which is contained within the larger Mississippi River watershed. All lakes, rivers, streams, and drainage ditches within the Shingle Creek Watershed flow into Shingle Creek, and eventually into the Mississippi River.

The Airport is located within the Twin and Ryan Lakes subwatershed, which contains four lakes, Upper, Middle, and Lower Twin Lake, and Ryan Lake. These lakes are recreational water bodies and are suitable for swimming and fishing. The closest of these lakes to the Airport is Upper Twin Lake, which is situated approximately one-half mile from the Runway 32 end. The Twin and Ryan Lakes subwatershed is made up of four catchment areas. The Airport is in the northerly catchment area, as surface water from the Airport generally flows through storm sewers to Twin Creek which flows into Upper Twin Lake. Twin Creek, the wetlands in the MAC Conservation Area, and the lakes within the subwatershed are included in the MDNR PWI and therefore fall under the jurisdiction of the MDNR Public Waters Work Permit Program which limits alteration of course, current, or cross section of these waters.

Two of the lakes in the subwatershed, Upper and Middle Twin Lakes (PWI #27-42/ #27004201 and #27004202), are classified as impaired waters because of mercury, polychlorinated biphenyls (PCB), and perfluorooctane sulfonate (PFOs) in fish tissue, and nutrient/eutrophication biological indicators. Nutrients are essential within a waterbody, but excessive amounts can cause degradation. According to Minnesota Rules 7050.0150, eutrophication is characterized by increased growth and abundance of algae and other aquatic plants, reduction or loss of dissolved oxygen, reduced transparency in water, and other chemical and biological changes. A 2007 Total Maximum Daily Load (TMDL) study identified the wetland in the MAC Conservation Area (PWI#24-639W) as a major source of phosphorous for the Twin Lakes. Phosphorous can come from stormwater carrying fertilizers and urban runoff. The SCWMC, in coordination with the MPCA, undertook an outlet modification that was completed in 2013 with the goal of reducing the amount of phosphorous leaving the wetland by an average of 300 pounds per year. According to the Airport's 2017 SWPPP, of the pollutants present in the Airport's runoff that are expected to have reasonable potential to impact stormwater, none are considered pollutants of impairment in either Upper or Middle Twin Lake.

Lower Twin Lake and Ryan Lake were previously classified as impaired but were delisted by MPCA in 2018 because the applicable water quality standards were achieved following restoration efforts. Shingle Creek is also considered an impaired water with stressors including dissolved oxygen, e. coli, chloride, and aquatic macroinvertebrate bioassessments affecting the beneficial uses for aquatic life and aquatic recreation. The Mississippi River is a listed impaired water in the area where it meets Shingle Creek due to mercury, PCBs, and nutrient/eutrophication biological indicators affecting aquatic life and consumption, and fecal coliform affecting aquatic recreation.



Document Path: X:\28387001\61542\03\TECH\Reports\Affected Environment & Environmental Consequences\Figure 4-14.mxd

The Mississippi River is located approximately three miles east of Airport property. The Cities of Minneapolis, New Hope, and Crystal obtain their drinking water from the Mississippi River. Land around the Mississippi River has additional protections in the Twin Cities area.

- The Mississippi River Corridor Critical Area (MRCCA) is a joint state, regional, and local program that provides coordinated planning and management for the 72-mile stretch of the Mississippi River through the seven-county metropolitan area and 54,000 acres of surrounding land across 30 local jurisdictions.
- The Mississippi River is a National River and Recreation Area along this 72-mile stretch, under the jurisdiction of the National Park Service. These designations include portions of Brooklyn Park and Brooklyn Center, and are located approximately 2.5 miles from Airport property.

Crystal Airport has a system of stormwater drainage that directs runoff from impervious surfaces to several large depressions that serve as natural infiltration basins or stormwater retention areas. Most runoff events do not result in stormwater discharges from these areas. On the east and northeast side of the Airport, runoff that does not infiltrate drains into Twin Creek and the MAC Conservation Area wetland complex (#27063900/PWI 27-639W), and ultimately to Upper Twin Lake. Areas on the south and west sides of the Airport are unlikely to discharge because they flow to natural depressions that do not have outlets. During most storm events, water in these depressions will not leave the site. During large storm events, water will flow toward the storm sewer beneath 57th Street and Welcome Avenue or Medicine Lake Road. Residential property north and west of the Airport also drains onto Airport property via four culverts. One of these entry points is located where Twin Creek enters Airport property. Two of the western points of entry are located along Douglas Drive, and a third is located along Bottineau Boulevard/County Road 81 northwest of the FBO apron. Airport storm sewers do not connect directly to the City storm sewer.

Environmental Consequences

The FAA considers effects to surface waters to be significant if the action will result in exceeding water quality standards established by federal, state, local, and tribal regulators, or if an action will contaminate public drinking water supply in a way that will adversely affect public health. One factor that can affect surface water quality is the amount of increased impervious surfaces associated with a project. An increase in impervious surface will lead to an increase in stormwater runoff. The location of the proposed new impervious surfaces with relation to existing Airport drainage and topography is shown in **Figure 4-15**. The proposed action will add approximately 292,300 square feet (6.7 acres) of impervious surface associated with the runway, taxiways, run-up pads, perimeter roads, and aircraft parking apron. However, approximately 232,550 square feet (5.3 acres) of existing impervious surface will also be removed, for a net increase of approximately 59,750 square feet (1.4 acres) of impervious surface as compared with the no-action alternative (approximately 73.3 acres of total impervious surfaces under the no-action alternative as opposed to approximately 74.7 acres of total impervious surfaces under the preferred alternative).

The proposed action will alter the existing stormwater management system at the Airport. The new taxiway system will fill approximately 0.8 acres of land that is currently a stormwater infiltration area located north of the existing Runway 14L end. Stormwater management practices will be investigated during final design to replace the associated stormwater storage volume. A drainage plan will be developed, and stormwater management practices will be investigated, which may include:

1. Natural infiltration of precipitation on site
2. Flow attenuation by use of vegetated swales and natural depressions
3. Stormwater retention
4. Stormwater detention

The proposed action at Crystal Airport will not alter the course of any public waters, nor will it adversely impact the designated beneficial use of the surface waters in the watershed. Changes to impervious surfaces will result in increased runoff into the watershed. Runoff will not be discharged directly into wetlands. A protective buffer strip at least 20 feet wide will be provide around wetlands.

MAC's contractor will implement best management practices (BMPs) for stormwater management and sediment control during construction. In addition, to minimize impacts, MAC's contractor will be required to comply with FAA AC 150/5370-10C, *Standards for Specifying Construction of Airports*, and specifically, Item P-156, *Temporary Air and Water Pollution, Soil Erosion, and Siltation Control*, which sets standards for environmental protection and water pollution control during construction. A SWPPP will specify the temporary and permanent erosion control measures, in compliance with local, state, and federal regulations. Construction activities will be designed in a manner that minimizes overall soil disturbance. Sediment control measures will be installed on all down gradient land disturbing activities before beginning construction. Construction practices will take necessary precautions to stormwater runoff with fuels, oils, bitumen, chemicals, or other harmful materials, and to reduce air pollution from particulate and gaseous matter. A variety of erosion prevention and sediment control practices may be necessary in order to stabilize slopes and drainage ways, protect inlets to the stormwater conveyance system, limit gully formation, and capture sediment. Several practices can be used as temporary erosion control and sediment control, and to meet MS4 requirements. Temporary sediment control practices may include use of vegetated buffers, silt fences, inlet protection, temporary sediment basins, fiber logs, or erosion control blankets, as appropriate.

The Airport's current SWPPP, a requirement of the MPCA's Industrial Stormwater Program to reduce the amount of pollution that enters surface and ground water from industrial facilities, will be revised to reflect the changes in impervious surface on the airfield and any associated new mitigation practices. To comply with NPDES stormwater permit requirements, the Airport will create a separate construction SWPPP that describes the best management practices to be used during construction to control stormwater runoff. Review by the SCWMC will be required because the project area is larger than five acres. Requirements as part of this review include but are not limited to the following:

- A hydrograph method, based on sound hydrologic theory, must be used to analyze runoff for the design or analysis of flows and water levels.
- Runoff rates for the proposed activity shall not exceed existing runoff rates for the two-year, ten-year, and 100-year critical storm events for the project location as set forth in NOAA Atlas 14

Volume 8, published June 2013, or its successor, using the online NOAA Precipitation Frequency Data Server or a similar data source. The applicant must document the location and event depths used. If an approved local water management plan requires more restrictive rate control, then the more restrictive rate shall govern. Runoff rates may be restricted to less than the existing rates when necessary for the public health and general welfare of the watershed. Applicants shall not exceed discharge rates as determined in the Commission's hydrologic model.

- Stormwater must be treated prior to discharge to remove 60 percent of phosphorus and 85 percent of total suspended solids. Treatment may be provided by one or more permanent sedimentation and water quality ponds or a combination of BMPs that together will meet removal requirements.
- Volume control BMPs must be incorporated into the site design to minimize the creation of new impervious surface and reduce existing impervious surfaces, minimize the amount of directly connected impervious surface, preserve the infiltration capacity of the soil, and limit increases in runoff volume exiting the site to the extent feasible considering site-specific conditions.

Design will meet these requirements to mitigate for surface water impacts and to comply with local and state regulations.

4.15.2 Floodplains

Regulatory Setting

Executive Order 11988, *Floodplain Management* (May 24, 1977), defines floodplains as “the lowland and relatively flat areas adjoining inland and coastal waters including flood-prone areas of offshore islands, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year.” Executive Order 11988 bans federal actions in a floodplain unless no practicable alternative exists and requires measures to minimize unavoidable short-term and long-term impacts if the proposed action occurs in a floodplain.

The State of Minnesota delegates floodplain regulation to local governments in Minnesota Statutes Chapter 103F and Chapter 462. The cities in which Airport property lies each have floodplain districts and corresponding development ordinances, along with the SCWMC. SCWMC Rule F states that alteration or fill in land below the 100-year critical flood elevation of any waters or wetland must obtain a review from the SCWMC. The relevant criterion for this review is, “Floodplain alteration or filling shall not cause a net decrease in flood storage capacity below the projected 100-year critical flood elevation unless it is shown that the proposed alteration or filling, together with the alteration or filling of all other land on the affected reach of the waterbody to the same degree of encroachment as proposed by the applicant, will not cause high water or aggravate flooding on other land and will not unduly restrict flood flows.” However, if a municipality has adopted a floodplain ordinance that allows a degree of floodplain encroachment, this ordinance will take precedence and no project review by the SCWMC will be necessary.

Affected Environment

As part of the National Flood Insurance Program (NFIP), the Federal Emergency Management Agency (FEMA) produces Flood Insurance Rate Maps (FIRM) which serve as official flood maps depicting Special Flood Hazard Areas (SFHA). According to FEMA's Flood Map Service Center, Crystal Airport property is found on multiple flood maps: Panels 27053C0203F, 27053C211F, 27053C212F, and 27053C0204F. These maps are shown in **Figure 4-16**. The study area for floodplains was limited to Airport property.

Most areas on and near the Airport are in Zone X, an area of minimal flood hazard. Zone X is determined to be higher than the elevation of the 0.2-percent-annual-chance flood. There is one SFHA listed on the Airport. Zone A is an area subject to flooding by the one-percent-annual-chance flood event generally determined using approximate methodologies, with no Base Flood Elevations (BFEs) or flood depths determined. The northeast side of the Airport has Zone A SFHA areas that are mostly aligned with Twin Creek, which flows through this location to the MAC Conservation Area. A small area of Zone A floodplain extends south from the creek and then west toward the run-up pad near the intersection of Taxiways C and D near the Runway 24R end. **Figure 4-14** depicts the floodplain zones as they relate to the Airport boundary and other water resources in the area.

Environmental Consequences

The FIRM panels do not indicate any potential flood hazard zones near any proposed airfield improvements. The northeastern corner of the Airport includes a Zone A SFHA; however, this zone is outside the proposed non-aeronautical use area as defined in Chapter 3. Therefore, there are no impacts to floodplains associated with the no-action or preferred alternatives.

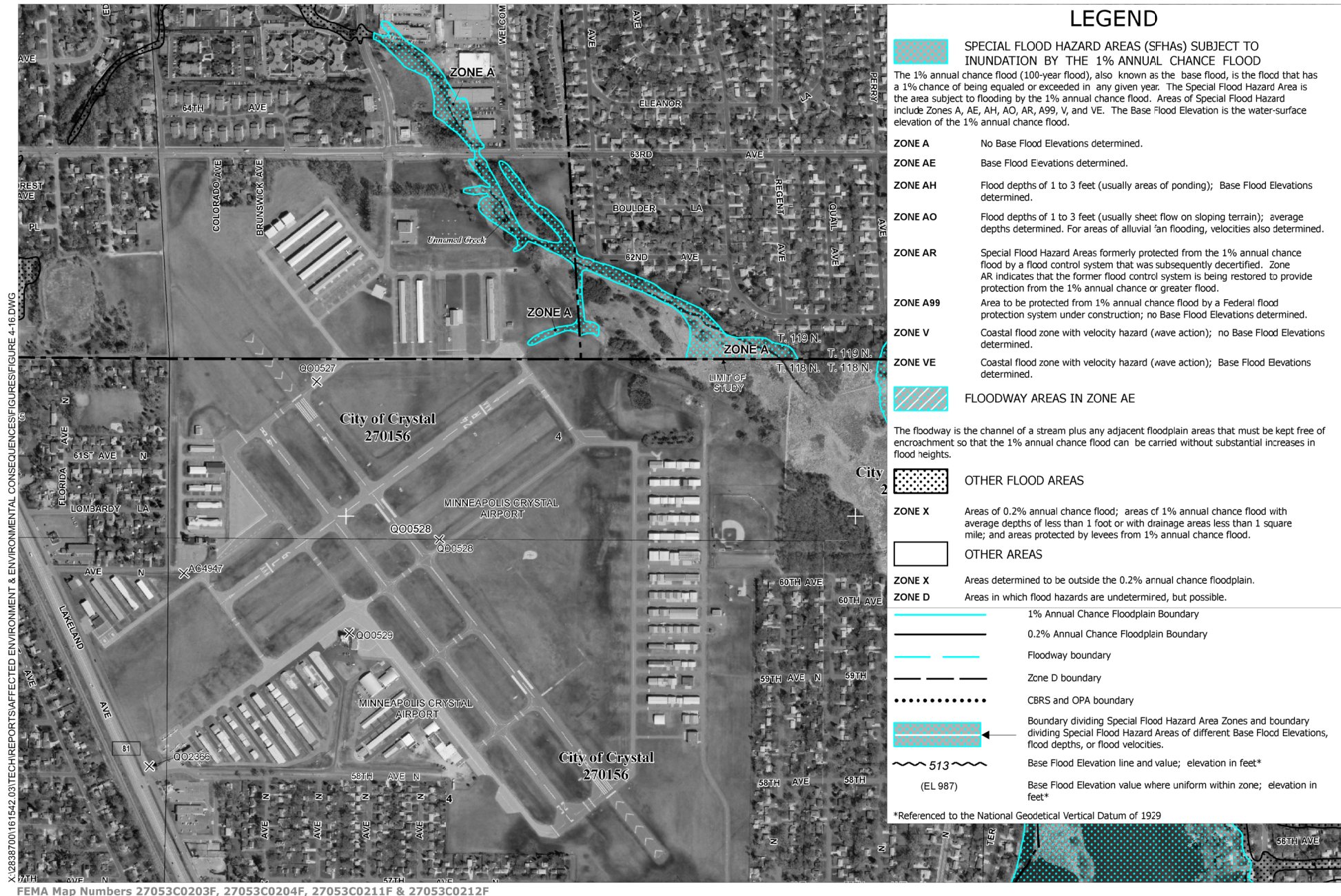
4.15.3 Groundwater***Regulatory Setting***

The Safe Drinking Water Act prohibits federal agencies from funding actions that contaminate an EPA-designated sole source aquifer or its recharge area. The Minnesota Wellhead Protection Program, administered by the Minnesota Department of Health, establishes standards for public water supplies and establishes maximum contaminant levels in drinking water sources.

The MDNR requires an appropriation permit for water use if a user is withdrawing more than 10,000 gallons of water per day for construction or other purposes and such use is not already authorized by another permit, such as through a municipal water system. Temporary Projects General Permit 1997-0005 authorizes temporary water appropriations for construction dewatering, landscaping, dust control, and wastewater ponds if projects:

- Have minimal potential for causing environmental impacts,
- Do not exceed 50 million gallons per year, and
- Are completed within one year from the start of pumping.

Authorization to use General Permit 1997-0005 must be received from the MDNR. Records of monthly water appropriation volumes are required and must be submitted to MDNR.



In addition, for MEPA documentation, when an EAW is required for a project with the potential to require a groundwater appropriation permit from the MDNR, the EAW must include “an assessment of the water resources available for appropriation.”

Affected Environment

Groundwater is found underground within cracks and spaces of soil and rock. Groundwater is an important source of water supply for many of the cities in the vicinity of Crystal Airport and is contained mostly in aquifers. The St. Peter Sandstone aquifer lies beneath the Airport and its surrounding area. The southern part of the Shingle Creek Watershed, including the Airport, is further underlain by the Prairie du Chien and Jordan aquifers. The surficial geology of the watershed is composed of primarily sand and gravel outwash and glacial till. Water table aquifers are located within these deposits that provide municipal and private water. These water table aquifers are vulnerable to contamination since they are relatively close to the land surface, and pollutants can reach these aquifers with minimal infiltration. Areas where the drift material is relatively thin, transmissivity is high, and water table depth is minimal are critical recharge areas. Areas with these features are more likely to convey contaminants to the water table aquifers than others. Portions of the wetland areas on the north side of Airport property display these characteristics.

Seven out of the ten cities within the Shingle Creek Watershed use wells to supply drinking water, while Crystal, New Hope, and Minneapolis obtain their water supply from the Mississippi River. This groundwater comes from a combination of water table and bedrock aquifers. There are no wellhead protection areas on Airport property, as shown in **Figure 4-14**, which protect the groundwater that contributes to public water supply wells. The study area for groundwater was limited to Airport property.

Environmental Consequences

The FAA considers a groundwater impact significant if the action exceeds federal, state, local, or tribal groundwater standards, or if the action contaminates an aquifer used for public drinking supply. Although there are areas on Airport property where water-table aquifers are sensitive to surface contaminants, the lack of wellhead protection areas indicates that these are not a public drinking water supply source. The proposed action is not expected to result in contaminants infiltrating groundwater. Therefore, there are no impacts to groundwater associated with the no-action or preferred alternatives.

4.15.4 Wetlands

Regulatory Setting

Wetlands are a valuable resource to human, animal, and plant communities. They are responsible for providing a home to a variety of insects, mammals, vegetation, fish, birds, and microbes. Wetlands perform physical, chemical, and ecological functions while varying in shapes, sizes, and types. The U.S. Army Corps of Engineers (USACE or “Corps”) defines wetlands as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” Wetlands are not limited to swamps, marsh, and similar areas, as a temporarily flooded pothole may also be a wetland if certain soils and vegetation are present.

Impacts to wetlands are regulated at the federal level by the Clean Water Act (CWA), with the USACE as the permitting agency. The CWA establishes the basic structure for regulating the discharge of pollutants into waters of the United States, which include wetlands and waterways. The two primary sections of the CWA relating to wetland impacts and permitting are Section 404 and Section 401. Section 404 of the CWA requires that those proposing to deposit dredged or fill material into the waters of the United States, including wetlands, must receive a permit before doing so. Section 401 requires any applicant for a federal license or permit to conduct an activity that may result in a discharge of a pollutant into waters of the United States to obtain a certification from the State that the discharge complies with the applicable water quality standards. The Corps issues Section 404 permits which are then certified by Section 401 approvals at the state level. In Minnesota, Section 401 certification is provided by the MPCA. Most Section 401 activities in the state are regulated under general CWA Section 404 permits from the Corps. General permits are issued on a nationwide, regional, or state basis for particular categories of activities such as minor road crossings or culvert replacement as a means to expedite the permitting process. For projects with potentially significant adverse wetland impacts or those projects exceeding the criteria for a general permit, an individual permit is usually required.

Wetlands are also regulated by the Wetland Conservation Act (WCA), a wetland protection law passed by the Minnesota state legislature in 1991. The purpose of the WCA is to maintain and protect Minnesota wetlands and the benefits they provide. It does so by requiring those proposing to drain, excavate, dredge, or fill a wetland to 1) first try to avoid disturbing the wetland, then 2) try to minimize the impact on the wetland, and finally 3) replace any lost wetland acres, functions, and values. The Minnesota Board of Water and Soil Resources (BWSR) administers WCA, with the assistance of local governmental units (LGUs). The SCWMC serves as the LGU for wetlands on Airport property. Hennepin County does not act as an LGU but enforces the WCA through participation on Technical Evaluation Panels (TEP) and writing of restoration orders relating to WCA violations. Projects impacting wetlands where the SCWMC acts as LGU under WCA must be reviewed by the Commission regardless of size. The MDNR also regulates projects that affect public water wetlands throughout the State of Minnesota.

Affected Environment

MAC's consultant conducted a wetland delineation on two separate field visits in June 2018 and September 2018 to document wetland types and boundaries within the project area (see **Appendix J**). The report identified seven wetlands in and near the Airport Area of Interest (AOI) for the preferred alternative. **Table 4-14** details the type, dominant vegetation, and wetland area within the AOI. Coordination with the SCWMC, the USACE, and the Section 404 Technical Evaluation Panel (TEP) was initiated with an application for a jurisdictional determination and wetland boundary review on October 31, 2018. On May 21, 2019, the SCWMC issued a WCA Notice of Decision approving the wetland boundaries and types indicated in the wetland delineation report (see **Appendix J**).

The seven identified wetlands represent two distinct wetland subtypes. Both subtypes fall under Type 1 according to the Circular 39 Classification System developed by the USFWS. Type 1 wetlands represent either seasonally flooded basins or floodplains. Type 1 wetland vegetation and flooding vary according to the season, but the benefits to groundwater recharge and discharge, water quality protection, and wildlife habitat remain constant.

Table 4-14: Delineated Wetlands Within the Area of Interest (AOI)				
Delineated June 2018				
Wetland	Wetland Type	Circular 39 Type	Dominant Vegetation	Area
1	Seasonally Flooded Basin	Type 1	Water smartweed, blunt spike rush	0.027
2	Seasonally Flooded Basin	Type 1	Water smartweed, dark green bulrush	0.031
3	Forested Floodplain	Type 1	Black ash, green ash, buckthorn, raspberry, reed canary grass	0.059
4	Seasonally Flooded Basin	Type 1	Water smartweed	0.060
5	Seasonally Flooded Basin	Type 1	Water smartweed	0.100
Delineated September 2018				
6	Seasonally Flooded Basin	Type 1	Crabgrass, barnyard grass	0.179
7	Seasonally Flooded Basin	Type 1	Lady's-thumb, meadow foxtail, barnyard grass	0.156
Total				0.612

Source: Mead & Hunt Wetland Delineation Report

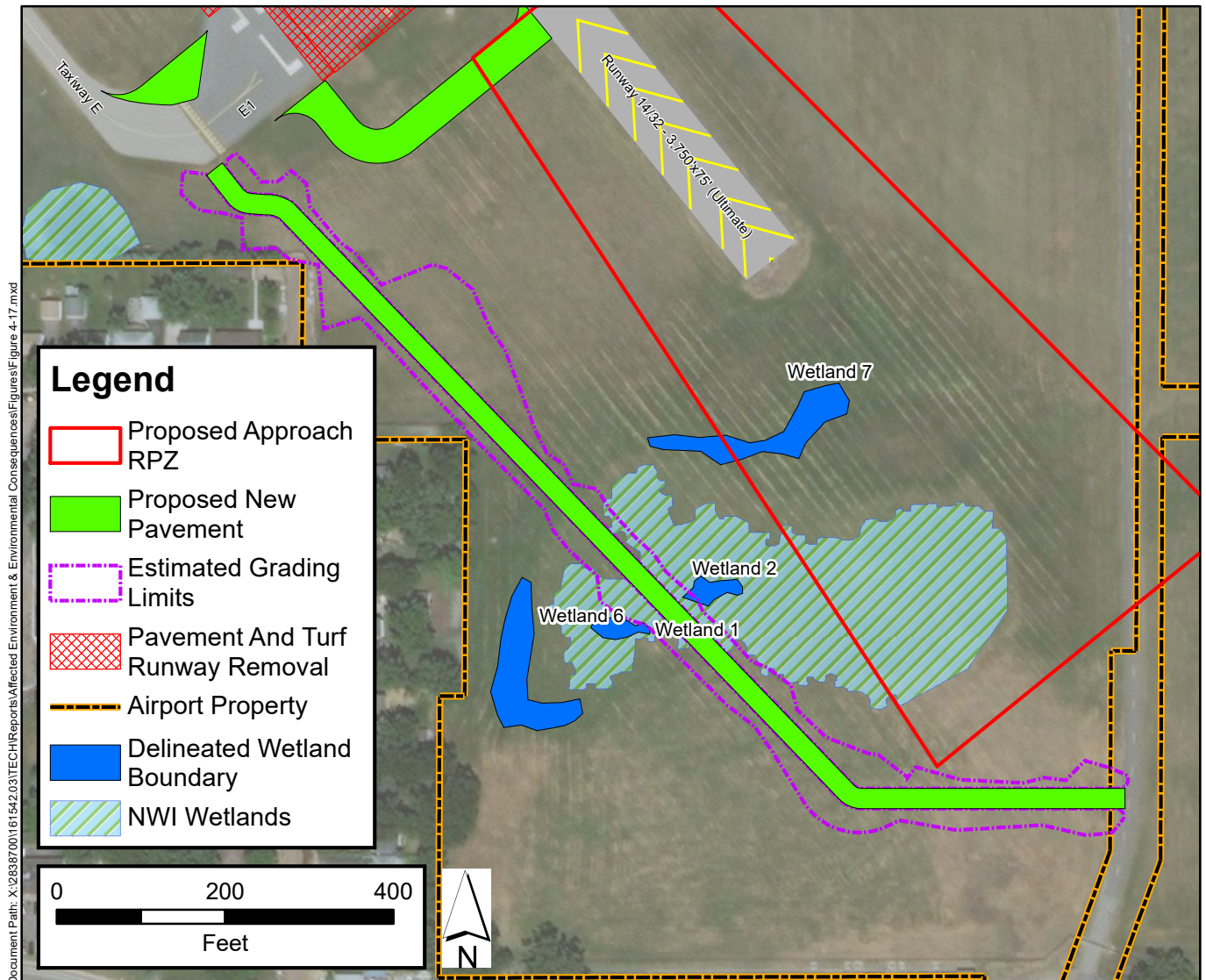
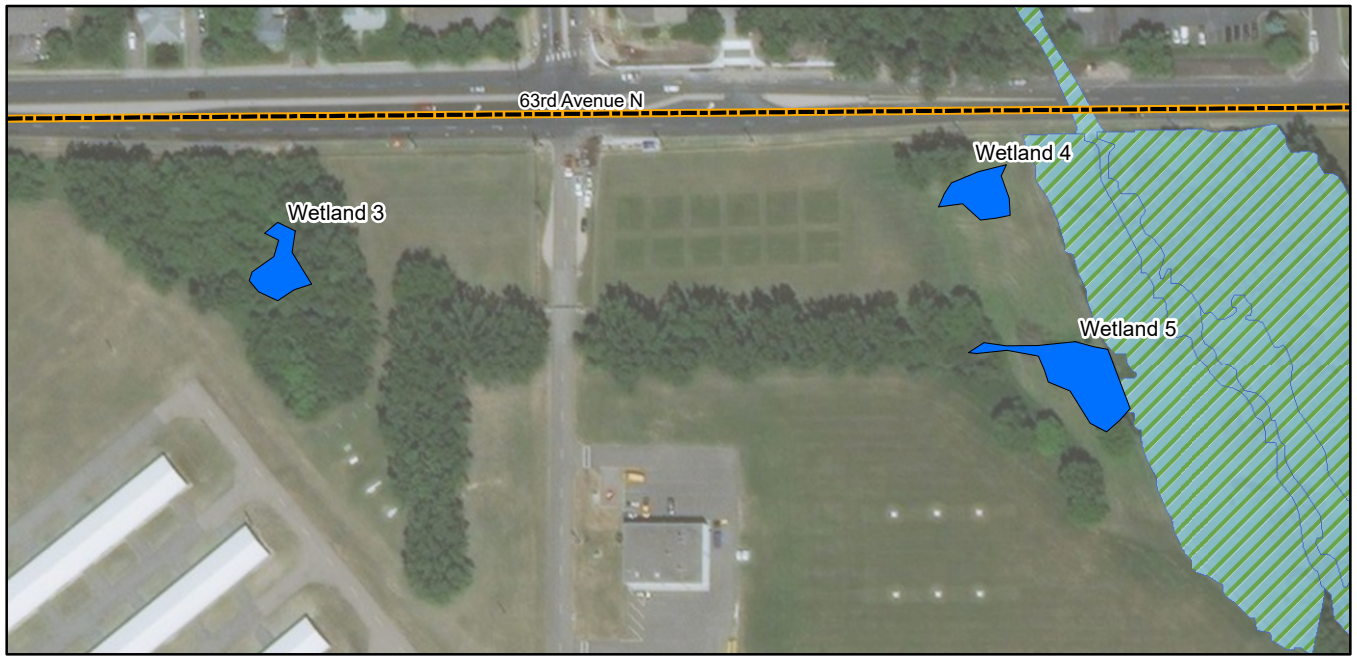
The National Wetlands Inventory (NWI) database shows wetlands throughout the MAC Conservation Area on the east side of Airport property (PWI #639W/27063900), as well as diagonally across the northeastern part of the fenced area along Twin Creek. This riverine wetland complex is to the immediate east of the area proposed for future non-aeronautical development. In addition, NWI wetlands can be found just west of Taxiway D, and on the south side of the Airport. NWI and field delineated wetlands located near components of the proposed action are shown in **Figure 4-17**. Descriptions of the delineated wetlands, and their relationship to the NWI maps are as follows.

Wetlands 1 and 2

Wetlands 1 and 2 are small shallow basins located south of the primary runway, straddling the proposed perimeter road. NWI mapping shows a large shallow area mapped as an emergent wetland located south of the Runway 32R blast pad. Field observations indicated several smaller wetlands within this larger NWI-mapped area. The observed dominant wetland species included water smartweed (*Persicaria hydropiper*), blunt spike rush (*Eleocharis obtusa*), and dark green bulrush (*Scirpus atrovirens*). Though there was no direct observation of wetland hydrology at the time of observation, wetland hydrology was indicated by field observation of secondary indicators including geomorphic position and a positive FAC-Neutral test at the sampling points. Saturated and wet signatures were also observed on aerial imagery.

Wetland 3

Wetland 3 is a small area of open canopy within a forested area located west of Zane Avenue in the proposed non-aeronautical development area. The small basin collects surface runoff from the south with no apparent outlet before infiltrating into the subsoil. This area does not appear on NWI mapping. The observed dominant species were wetland vegetation, including reed canary grass (*Phalaris arundinacea*), raspberry (*Rubus idaeus*), black ash (*Fraxinus nigra*), and green ash (*Fraxinus pennsylvanica*).



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Minnesota Department of Natural Resources - Public Waters Inventory (PWI) Map
http://www.dnr.state.mn.us/waters/watermgmt_section/pwi/maps.html

U.S. Fish & Wildlife Service - National Wetlands Inventory
<https://www.fws.gov/wetlands/Data/Mapper.html>

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

FIGURE 4-17
 Field Delineated Wetlands
 Crystal Airport
 Environmental Assessment

Wetlands 4 and 5

Wetlands 4 and 5 are emergent wetlands located immediately east of the proposed non-aeronautical development area. Wetland 5 is located within the Twin Creek floodplain mapped by FEMA. Slopes on the west side of this area rise three to four feet. These wetlands do not appear on NWI mapping. The Twin Creek floodplain complex to the east is mapped as a mixture of forested and emergent wetland types. The hydrology in this area has been altered due to a berm near the culvert under 63rd Avenue North. Further alteration of the hydrology includes the vacation of two ditches that previously had drained areas to the west to the creek. Surface runoff is the primary source of water. The observed dominant vegetation was water smartweed. Hydric soils were observed in the wetlands.

Wetlands 6 and 7

During the September visit, additional areas were examined to assess options for aligning the perimeter road through this area. Wetlands 6 and 7 are emergent wetlands located at the southern end of the Airport between the hangar access road (Scott Avenue North) and the western fence line. Wetland 6 is a shallow basin west of Wetland 2 with a slight topographic rise separating them. Wetland 7 is a shallow basin/swale situated along the grading slope of the Runway 32R blast pad. Pockets of standing water and saturation at the surface were present in both of the wetlands. The wetland boundary was determined by a transition of observed plant communities to upland species, a lack of hydrology indicators, and changes in elevation. Both wetlands were found in low spots within generally flat terrain that enables the collection of surface runoff.

Environmental Consequences

Two components of the preferred alternative potentially affect delineated wetlands: (1) the non-aeronautical development area; and (2) the southern perimeter road segment. The non-aeronautical development area contains three small wetlands. Two are located on the east side of the development area, and the other is located west of the Airport access road. The MAC will require developers of this site to comply with any wetland rules and buffer requirements set by the SCWMC.

The proposed perimeter road segment on the south side of the Airport will pass between the delineated boundaries of two small wetlands, Wetlands 1 and 2. The delineated wetlands are each approximately 0.03 acres in size. Preliminary estimates of grading limits for the proposed perimeter road segment indicate that fill activities will be required in both wetlands. Because of this impact, additional wetland survey efforts were conducted to determine if a perimeter road alignment exists that would avoid all wetland boundaries and meet FAA offset and safety requirements. The location and size of Wetlands 6 and 7 ruled out options along the western perimeter fence and closer to the south end of the runway because of larger potential fill impacts, noise impacts to residential areas to the west, and proximity to runway safety areas.

Preliminary estimates of the required fill within Wetlands 1 and 2 indicate that the total fill area is likely to be less than 1,000 square feet. According to Minnesota Statute § 103G.2241, Subd. 9(d)(2), if less than 1,000 square feet of Type 1 wetlands are drained or filled in this location (i.e. outside the shoreland wetland protection zone in a less than 50 percent area within the 11-county metropolitan area), a replacement plan is not required. Because the disturbance to the wetlands for the preferred alternative is

likely below this *de minimis* threshold, impacts will be minimal, and replacement of these wetlands is not expected to be required. If during detailed design it is determined that more than 1,000 square feet of wetlands will be affected, a replacement plan will be developed and implemented.

In terms of compliance with Section 404 of the Clean Water Act and based on conversations with USACE, the wetland impact is expected to be authorized under the USACE St. Paul District Transportation Regional General Permit (RGP) as a Category 2 regulated activity. Because the estimated wetland impact is less than 0.1 acre, a Pre-Construction Notification (PCN) to the USACE and compensatory mitigation are not required. Projects that meet the terms and conditions of the Transportation RGP and do not require submittal of a PCN may commence work after the project proponent has carefully confirmed that the activity will be conducted in compliance with all applicable terms and conditions of the RGP.

4.15.5 Wastewater

Regulatory Setting

The MEPA process requires consideration of wastewater impacts, including the source, composition, and amount, if a project will generate wastewater.

Affected Environment

Current sources of wastewater at the Airport include wastewater from buildings, maintenance areas, and an aircraft wash area. The study area for wastewater was limited to Airport property.

Environmental Consequences

Proposed non-aeronautical development may generate additional wastewater in the City of Brooklyn Park, but the impacts will not be significant in the context of the municipal wastewater load. None of the aeronautical improvements contemplated by the preferred alternative will contribute to wastewater originating from the Airport.

4.15.6 Water Resources Conclusion

Based on the information above, the established FAA thresholds of significance under NEPA, and the significance thresholds under MEPA, there are no significant impacts to water resources associated with the proposed project.

4.16 Cumulative Impacts and Cumulative Potential Effects

4.16.1 Regulatory Setting

NEPA requires the analysis of “cumulative impacts.” Cumulative impacts are impacts on the environment that result from the incremental impact of the action when added to past, present, and reasonably foreseeable development in the area that is not directly associated with the preferred alternative, regardless of what agency or person undertakes such actions. According to FAA Order 5050.4B, reasonably foreseeable actions include those “on or off-airport that a proponent would likely complete and

that has been developed with enough specificity to provide meaningful information to decision makers and the interested public.”

MEPA requires the analysis of “cumulative potential effects.” Cumulative potential effects are effects on the environment that result from the incremental effects of the project under review in addition to other projects in the “environmentally relevant area” that might “reasonably be expected to affect the same environmental resources.” In other words, the cumulative potential effects analysis examines whether the incremental effects of a proposed project, combined with other projects in the same geographic area and taking place over the same period of time, will have a significant effect on the same environmental resources. Minnesota Rule 4410.0200, subp. 11a provides that the “other projects” include “future projects actually planned or for which a basis of expectation has been laid, regardless of what person undertakes the other projects or what jurisdictions have authority over the projects.” Under the rule, a basis of expectation is laid for a future project if the project is “reasonably likely to occur” and, if so, whether “sufficiently detailed information is available about the project to contribute to the understanding of cumulative potential effects.”

In summary, a MEPA cumulative effects evaluation analyzes past and present actions in a manner similar to NEPA. But for future actions, a NEPA cumulative impacts analysis considers projects that are “foreseeable,” while a MEPA cumulative potential effects analysis considers only projects that are “reasonably likely to occur.”

4.16.2 Past, Present, and Reasonably Foreseeable Projects

On-Airport

Crystal Airport was initially built in 1952 and grew to include the current runway configuration, control tower, and the existing building areas by the late 1960s. In the late 1990s and 2000s, the MAC removed several obstructions around the Airport and installed sanitary sewer and water facilities. Multiple projects have been completed at the Airport within the last ten years. In 2008, Runway 14L/32R and segments of Taxiway E connectors were reconstructed. New runway lighting was also added at this time. Additional reconstruction of taxiways and taxilanes occurred between 2009 and 2014. A precision approach path indicator (PAPI) was installed for Runway 14L in 2014.

The Airport recently completed an update to its long-term comprehensive plan (LTCP) that guides future on-Airport projects. Projects recommended in the 2035 LTCP include the proposed action and preserves several areas on the Airport for possible hangar and non-aeronautical development in the long-range future. However, the 2035 LTCP is a planning document. The projects discussed in the 2035 LTCP are general recommendations and do not include specific proposed layouts, tenants, or uses.

Recent Off-Airport Projects

Reconstruction of Bottineau Boulevard (County Road 81) from 63rd Avenue North to West Broadway Avenue is currently underway, and reconstruction of the segments from Highway 100 to 63rd Avenue North was recently completed. The Bottineau Boulevard reconstruction project included rebuilding the roadbed, reconfiguring lanes, and conducting underground utility and stormwater improvements. As part

of the project, Hennepin County carried out property and right-of-way acquisition in several areas near major intersections. In addition, the City of Crystal completed reconstruction of city streets in neighborhoods surrounding the Airport in 2017.

“Foreseeable” and “Reasonably Likely to Occur” Future Off-Airport Projects

A Blue Line extension to the metropolitan light rail transit (LRT) network is planned to run parallel to the existing BNSF freight rail line west of the Airport, as of the January 2017 projected alignment for the 13-mile route. Near the Airport, new transit stations are planned for the intersection of Bottineau Boulevard and 63rd Avenue North, and at the intersection of Bottineau Boulevard and Bass Lake Road. Metro Transit has planned a new Park and Ride facility near the Bass Lake Road Station. The LRT project entered the engineering stage in 2017, and service is projected to begin in the year 2023 or later, pending necessary approvals and funding.

The City of Crystal, Hennepin County, and Metro Transit produced a station area plan for Bass Lake Road that was finalized in July 2016. Several properties were identified as opportunity sites for transit-oriented development, including additional multi-family residential and commercial developments. The plan also shows a Transit Oriented Development Overlay in the station area. Several vacant parcels near the intersection of Bottineau Boulevard and Bass Lake Road are probable candidates for development in the foreseeable future. The City of Crystal will begin reconstruction of the Bass Lake Road streetscape in accordance with the station area plan in 2018-2019, as well as reconstruct Becker Park in 2019.

Brooklyn Park also undertook station area planning at the same time for the intersection of Bottineau Boulevard and 63rd Avenue North. There are fewer proposals for near-term growth associated with this station, but one commercial or industrial site was identified as a long-range redevelopment opportunity for high density residential use. Although the Bottineau Boulevard and 63rd Avenue North station area planning may be “foreseeable” under NEPA, it is not “reasonably likely to occur” under MEPA.

4.16.3 Cumulative Environmental Consequences

The recent and planned actions described above, when combined with the proposed action at Crystal Airport, do not have significant cumulative effects on environmental impact categories in the vicinity of Crystal Airport. Many of the past and planned projects near the Airport are related to transportation along the Bottineau Boulevard corridor and could in combination have an impact on the land use adjacent to the Airport. However, the proposed action does not contribute to these impacts.

Impacts of the proposed action when considered with past or future actions do not constitute a significant impact that cannot be mitigated. All future actions will be subject to avoidance and minimization studies and will undergo agency permitting as required. Every effort will be made to avoid or minimize impacts where feasible. No significant cumulative impacts or cumulative potential effects are associated with the proposed action.

4.17 Summary

A summary of the impacts presented in this section is presented in **Table 4-15**. The table includes the impacts from the no-action and preferred alternatives, as well as any required mitigation, permits, or associated actions.

Table 4-15: Summary of Environmental Consequences				
Environmental Impact Category		Impacts: No-Action Alternative	Impacts: Preferred Alternative	Required Permitting/Mitigation & Associated Actions
Air Quality		None	Minimal impacts during construction	Implement EPA-recommended best management practices (BMPs) and control strategies during construction.
Biological Resources (including fish, wildlife, and plants)		Tree removal (ongoing maintenance)	Tree removal	<ul style="list-style-type: none"> • Tree removal to occur during NLEB dormant season (October 1 – April 30). • Implement April 2015 USFWS/USDOT NLEB avoidance and minimization measures. • Tree removal to occur outside of migratory bird nesting season (May – October).
Climate		None	None	None
Coastal Resources		None	None	None
DOT Section 4(f) Lands		Tree removal in Edgewood Park	Tree removal in Edgewood Park	<ul style="list-style-type: none"> • Tree removal BMPs. • Tree replacement and/or compensation.
Farmlands		None	None	None
Hazardous Materials, Solid Waste, and Pollution Prevention		None	None	Dispose of construction materials and solid waste in accordance with state and local laws.
Historic/Architectural & Archeological Resources		None	None	None
Land Use	Residential	Residential parcels in RPZ and state Safety Zones	Residential parcels in RPZ and state Safety Zones	Convene Joint Airport Zoning Board (JAZB) to revise the existing Airport Zoning Ordinance.
	Ground Transportation	RPZ conflicts	RPZ conflicts	None
	Non-Aeronautical	None	Change from airport zoning in non-aeronautical development area	Change to City of Brooklyn Park land use zoning.
Natural Resources and Energy Supply		None	Minor increase in energy demand	None
Noise and Compatible Land Use		Total of 12 residential parcels exposed to 65 DNL noise contour	Residential exposure to 65 DNL noise contour reduced to 4 parcels	<ul style="list-style-type: none"> • Conduct noise level reduction testing of homes within the 65 DNL noise contour. • Update voluntary noise abatement plan. • Hold educational briefings with pilots.

Table 4-15: Summary of Environmental Consequences				
Environmental Impact Category		Impacts: No-Action Alternative	Impacts: Preferred Alternative	Required Permitting/Mitigation & Associated Actions
Socioeconomics, Environmental Justice, and Children's Health & Safety		None	None	None
Visual Effects (including light emissions)		None	Extended airfield light systems	Energy efficient light-emitting diode (LED) light fixtures and visual screening methods to be considered during project design.
Water Resources	Surface Water & Stormwater	None	1.4 acres increased impervious area	<ul style="list-style-type: none"> • Construction Stormwater Pollution Prevention Plan. • Onsite Best Management Practices. • NPDES Multi Sector General permit. • SCWMC permit.
	Floodplains	None	None	None
	Groundwater	None	None	MDNR appropriation permit (if necessary).
	Wetlands	None	Minimal direct wetland impact (less than 1,000 square feet)	<ul style="list-style-type: none"> • Compliance with Minnesota Wetland Conservation Act. • Compliance with Clean Water Act • MPCA CWA Section 401 Water Quality Certification.
	Wastewater	None	None	None
Cumulative Impacts		No substantial impacts	No substantial impacts	None

State Environmental Assessment Worksheet (EAW) Content

As explained in Chapter 1, this EA/EAW is circulated in place of the Minnesota EAW form under MEPA, as it addresses each of the environmental effects identified in the EAW form. Informational requirements for each section of the EAW form are cross-referenced with appropriate sections of this EA/EAW below:

1. **Project Title:** Crystal Airport Airfield & Associated Improvements
2. **Project Proposer:** Metropolitan Airports Commission (MAC)
 - The project proposer contact is Bridget Rief, Vice President, Planning and Development for the MAC. Ms. Rief's mailing address is 6040 28th Avenue South, Minneapolis, MN, 55450. Ms. Rief can be reached via email at Bridget.Rief@mspmac.org or via phone at 612-725-8371.
3. **Responsible Government Unit (RGU):** Metropolitan Airports Commission (MAC)
4. **Reason for EAW Preparation:** Mandatory EAW under Minnesota Statutes section 473.614
5. **Project Location**
 - County: Hennepin
 - City/Township: Crystal, Brooklyn Park, and Brooklyn Center
 - PLS Location: Township #118, Range 21W, Sections 4 and 5; Township #119, Range 21W, Sections 32 and 33
 - Watershed (81 major watershed scale): Mississippi River
 - GPS Coordinates: Latitude N 45° 03' 43.2" and Longitude W 93° 21' 14.2"
 - Tax Parcel Number: 04-118-21-42-0001, 04-118-21-42-0012, 04-118-21-11-0001, 04-118-21-31-0001, 04-118-21-42-0003, 04-118-21-42-0004, 04-118-21-42-0005, 04-118-21-42-0010, 04-118-21-42-0011, 04-118-21-42-0018, 04-118-21-42-0019, 04-118-21-42-0029, 04-118-21-42-0034, 04-118-21-42-0035, 04-118-21-42-0036, 04-118-21-42-0037, 04-118-21-42-0038, 04-118-21-42-0042, 04-118-21-42-0043, 05-118-21-14-0001, 32-119-21-44-0002, 32-119-21-44-0003, 32-119-21-44-0004, 32-119-21-44-0007, 32-119-21-44-0008, 32-119-21-44-0033, 32-119-21-44-0034, 33-119-21-33-0001, 33-119-21-33-0005, 33-119-21-34-0001, 33-119-21-43-0004, 33-119-21-43-0005, 33-119-21-43-0006, 32-119-21-44-0001
 - County map: See Figure 4-1
 - U.S. Geological Survey map: See Figure 4-2
 - Site plans showing all significant project and natural features: see Chapter 3, *Alternatives*, Figure 3-5
6. **Project Description**
 - Brief project summary to be published in the EQB Monitor (approximately 50 words): Decommission Runway 14R/32L and convert to taxiway, convert portions of Runway 14L/32R blast pads to usable runway for a 3,750 foot length with declared distances, shift Runway 14L/32R 115 feet northwest, establish GPS-based non-precision instrument approach procedures for Runway 32R end, improve taxiway system, add perimeter roads, expand FBO apron, and develop land along 63rd Street N for non-aeronautical use.
 - Complete description of the proposed project and related new construction:

- Decommission Runway 14R/32L and convert it to a full parallel taxiway for primary Runway 14L/32R, extended to the new runway ends.
- Convert portions of primary Runway 14/32 blast pads to usable runway for a total published length of 3,750 feet with declared distances and change the runway designation to Utility.
- Shift the primary Runway 14/32 approximately 115 feet to the northwest along its centerline.
- Reduce the length of existing Runway 06R/24L (turf) to 1,669 feet to clear Taxiways D and F from its RSAs.
- Revise the existing Runway 14 instrument approach procedure and establish a non-precision GPS-based instrument approach procedure (LNAV) to the Runway 32 end.
- Replace the Runway 32 VASI with a PAPI.
- Adjust and extend the MIRL and MITL systems to correspond with the proposed primary runway length.
- Improve and simplify the taxiway system, including:
 - Convert Taxiway E into an apron edge taxiway between Taxiways A and E1.
 - Remove the section of Taxiway E that crosses Runways 06L/24R and 06R/24L between Taxiway A and Taxiway B.
 - Remove Taxiways E2 and E3 between Taxiway E and the future parallel taxiway and replace them with a single new connector located between the removed taxiway sections.
 - Add a connector taxiway between Taxiway E and the future parallel taxiway offset from existing Taxiway B by approximately 100 feet to the northwest.
 - Remove existing runway end connector Taxiways E1 and E4 and replace them with connectors from the future parallel taxiway to the new Runway 14/32 ends.
 - Add new engine run-up pads on either end of Runway 14/32 on its northeast side, add a new engine run-up pad adjacent to Taxiway E1, and expand the existing engine run-up pad adjacent to Taxiway E4.
- Construct on-airport perimeter roads around runway ends on the north, west, and south sides of the airfield to allow ground vehicles to circulate without crossing runways.
- Expand the FBO apron to increase available tie-down spaces for aircraft and remove tie-downs from the Runway 06R RPZ.
- Release certain Airport property for non-aeronautical use along 63rd Avenue North, in the area west of the Twin Creek wetland complex and on both sides of the 63rd Avenue North entrance road.
- Project construction is expected to commence in 2020 and would occur in annual phases over the course of approximately three years.
- For information on project purpose, see Chapter 2, *Purpose & Need*.
- For information on project magnitude, see Chapter 3, *Alternatives*.

- For information on construction, operation methods, and features that will cause physical manipulation of the environment or will produce wastes, see Chapter 4, *Affected Environment & Environmental Consequences*.
 - There are no future stages of this development that would include development on other property.
 - This project is not a subsequent stage of an earlier project.
- 7. Cover Types**
- For information on existing cover types, see Chapter 4, *Affected Environment & Environmental Consequences*, Section 4.3.2.
 - For information on cover types under the no-action and preferred alternatives, see Chapter 4, *Affected Environment & Environmental Consequences*, Sections 4.3.2 and 4.15.1.
- 8. Permits and Approvals Required:** Government approvals and permits needed for the project are summarized in Chapter 4, *Affected Environment & Environmental Consequences*, Table 4-15. For information on specific permits and approvals, see the relevant sections of Chapter 4. The project would be self-funded by aviation users by Federal Aviation Administration (FAA) or Minnesota Department of Transportation (MnDOT) grant programs, or both, as well as MAC funds. No local sales or property taxes will be used to fund airport improvements.
- 9. Land Use**
- For information on existing land uses, municipal plans, and zoning, see Chapter 4, *Affected Environment & Environmental Consequences*, Sections 4.10.1 and 4.10.2.
 - For information on the project's compatibility with nearby land uses, plans, and zoning, as well as measures incorporated into the project to mitigate potential incompatibility, see Chapter 4, *Affected Environment & Environmental Consequences*, Section 4.10.3.
- 10. Geology, Soils, and Topography/Land Forms**
- For information on existing geology, soils, and topography/land forms, see Chapter 4, *Affected Environment & Environmental Consequences*, Section 4.1.3.
 - For information on measures to minimize soil erosion during construction, see Chapter 4, *Affected Environment & Environmental Consequences*, Section 4.15.1.
- 11. Water Resources**
- For information on existing water resources, including both surface water and groundwater, see Chapter 4, *Affected Environment & Environmental Consequences*, Section 4.15.
 - For information on effects to water resources and measures to minimize or mitigate effects, see Chapter 4, *Affected Environment & Environmental Consequences*, Section 4.15.
- 12. Contamination/Hazardous Materials/Waste**
- For information on pre-project site conditions and project-related generation/storage of solid wastes and hazardous materials, see Chapter 4, *Affected Environment & Environmental Consequences*, Section 4.8.
- 13. Fish, wildlife, plant communities, and sensitive ecological resources (rare features)**
- For information on existing biotic communities and rare features on and near the site, see Chapter 4, *Affected Environment & Environmental Consequences*, Section 4.3.1.

- For information on effects to biotic communities and rare features, and associated measures that will be taken to avoid, minimize, or mitigate adverse effects, see Chapter 4, *Affected Environment & Environmental Consequences*, Section 4.3.1.

14. Historic Properties

- For information on historic properties on and near the site, see Chapter 4, *Affected Environment & Environmental Consequences*, Section 4.9.2.
- For information on effects to historic properties, see Chapter 4, *Affected Environment & Environmental Consequences*, Section 4.9.3.

15. Visual

- For information on project-related visual effects, see Chapter 4, *Affected Environment & Environmental Consequences*, Section 4.14.3.

16. Air

- For information on project-related emissions, see Chapter 4, *Affected Environment & Environmental Consequences*, Sections 4.2 and 4.4.

17. Noise

- For information regarding existing and future aircraft noise at the Airport, see Chapter 4, *Affected Environment & Environmental Consequences*, Section 4.12.

18. Transportation

- For information on effects to the regional transportation system, see Chapter 4, *Affected Environment & Environmental Consequences*, Section 4.10.3.

19. Cumulative Potential Effects

- For information on past, present, and reasonably foreseeable actions on and near the Airport, see Chapter 4, *Affected Environment & Environmental Consequences*, Section 4.16.2.
- For information on cumulative effects, see Chapter 4, *Affected Environment & Environmental Consequences*, Section 4.16.3.

20. Other Potential Environmental Effects

- For information on socioeconomic and environmental justice effects related to this project, see Chapter 4, *Affected Environment & Environmental Consequences*, Section 4.13.

The responsibility for the Environmental Assessment (EA) under the National Environmental Policy Act (NEPA) rests with the Federal Aviation Administration (FAA) Airports District Office in Minneapolis, Minnesota. The responsibility for the Environmental Assessment Worksheet (EAW) under the Minnesota Environmental Policy Act (MEPA) rests with the Metropolitan Airports Commission (MAC). This EA/EAW was prepared by Mead & Hunt, Inc. under contract with the MAC.

The following MAC staff members guided preparation of this EA/EAW.

- **Neil Ralston, A.A.E.**, Airport Planner – Planning & Development
- **Bridget Rief, P.E.**, Vice President – Planning & Development
- **Toni J. Howell**, Manager – Environmental Affairs
- **Jennifer Gora, P.E., F.ASCE**, Project Manager – Airport Development
- **Dana Nelson**, Director – Stakeholder Engagement
- **Bradley Juffer**, Manager – Community Relations
- **Gary Schmidt**, Director – Reliever Airports
- **Philip Tiedeman, C.M.**, Manager – Reliever Airports
- **Melissa Scovronski**, Manager – Corporate Communications & Creative Services
- **Evan L. Wilson**, Senior Attorney

The following Mead & Hunt staff members were directly responsible for preparing the contents of this document.

Evan Barrett, AICP – Project Manager

Mr. Barrett has more than ten years of experience with NEPA documentation, airfield planning studies, and airport master plans.

Colleen Bosold – Stakeholder Outreach Coordinator

Ms. Bosold has more than ten years of experience in managing development of stakeholder communication materials for airport planning, engineering, and architecture projects.

Laura Morland, PE – National Environmental Practice Leader, Aviation Services

Ms. Morland has more than 30 years of experience and specializes in aviation environmental issues. Her airport experience includes planning and design, resident engineering, NEPA documentation, and environmental compliance. She develops monitoring programs for regulatory compliance and has participated in numerous feasibility and planning studies.

Tom Ward – Certified Arborist

- International Society of Arboriculture – Certified Arborist MI-0734A, expires 12/31/19
- Michigan Registered Forester – Registration Number 3301000642, expires 5/31/2020

Corbett Smith, CM – Aviation Planner

Mr. Smith has over ten years of experience as an airport planner. He is responsible for conducting technical research and analyses, designing aviation-related facilities, technical report writing and preparing airport noise contours and emissions inventories for airport planning and airport environmental projects.

Robert Sims – Aviation Planner

Mr. Sims is an airport planner with airport operations experience. He has managed Stormwater Pollution Prevention Plan and Community Emergency Response projects. He is also familiar with regulatory compliance, planning documentation, and required airfield inspections.

Sarah Emmel – Aviation Planner

Ms. Emmel is an airport planner with experience in land use planning and stakeholder engagement. She is also familiar with NEPA documentation.

Karen Wieneri, PE – Civil Engineer

Ms. Wieneri is a professional civil engineer with 30 years of extensive experience in water resources and municipal projects. She is skilled at providing project design and technical support with an emphasis on civil and heavy-civil of water resources projects for cities, counties and federal agencies.

Nathaniel A. Kitzrow – CAD Technician

Mr. Kitzrow has 15 years of experience as a CAD Technician in the civil engineering industry working in the residential, commercial, agricultural and aviation markets. In support of the various projects in these markets, Nat has been involved in the layouts and designs of utilities, roadways, runways, taxiways, aprons and airport infrastructures, site grading, plan set coordination and creation, exhibit drawings for presentations, writing legal descriptions for plats, and survey assistance.

Brauna Hartzell, GISP – GIS Analyst and Environmental Scientist

Ms. Hartzell has more than 30 years of experience applying GIS software and database design techniques to support wetlands and water resources, historic preservation, community planning, transportation, aviation and military planning, and municipal infrastructure and storm water management. She also has more than ten years of experience in wetland delineation, wetland permitting, and restoration projects. She performs wetland and field delineations conforming to current United States Army Corps of Engineers (USACE) and State standards including the Northcentral and Northeast Regional Supplements, designs custom field data collection applications, collects field data using hand-held Global Positioning Systems (GPS) data collectors and tablets, and prepares NEPA documentation. Brauna has successfully guided numerous projects through the Section 404 permitting process.

Kimberly Shannon – Environmental Scientist

Ms. Shannon is an environmental scientist with over a decade of experience. She has professional experience in coordinating and completing a variety of project types including oil and gas, electric transmission, nuclear, transportation, commercial development, and local government. Her technical expertise includes identification, mapping, and delineation of streams and wetlands; 404 permitting and compensatory mitigation; United States Army Corps of Engineers (USACE) coordination; and assisting various clients through the 404 permitting process. She also has professional experience in the

preparation and coordination of environmental assessment and categorical exclusion documents in support of the NEPA process, habitat evaluation for threatened and endangered species, and technical writing and editing.

Louis J. Bridges, Ph.D., PWS, CWB – Senior Environmental Professional

Mr. Bridges has over 25 years of experience focusing on large-scale environmental strategic planning and project management for clients with projects involving federal natural resource agencies; environmental policy analysis and compliance system development; management of numerous NEPA compliance, permitting, and documentation efforts working with federal, state, and tribal resource management and regulatory agencies.

Kathryn Ohland – Cultural Resource Specialist

Ms. Ohland is an architectural historian with experience in conducting historic resource surveys, which includes field surveys, photographic documentation, historical research, and report preparation. Katie is also responsible for completing Section 106 compliance including the identification and evaluation of historic resources while applying the National Register Criteria. Katie exceeds the *Secretary of the Interior's Standards* in history and architectural history.

Vicki Twinde-Javner – Senior Research Archaeologist, Mississippi Valley Archaeology Center

Ms. Twinde-Javner is an archaeologist that specializes in cultural resource management, midwestern archaeology, and historic archaeology. She holds a Master's Degree in anthropology from the University of Wisconsin-Milwaukee.

Vicky Valley – Administrative Assistant

Ms. Valley is responsible for report format, review, and compilation.

Public Involvement and Agency Coordination

This chapter provides a summary of the public involvement and agency coordination efforts that have taken place throughout this Environmental Assessment (EA) / Environmental Assessment Worksheet (EAW) process.

Prior to initiating the environmental review process, the Metropolitan Airports Commission (MAC) completed a Long-Term Comprehensive Plan (LTCP) that included robust public outreach. Initial stakeholder outreach efforts for the LTCP involved meetings with partner agencies, municipal representatives, and Airport tenants before the Draft LTCP was completed. These meetings provided information regarding the plan's purpose, process, preliminary findings, and timeline. The next phase of stakeholder outreach consisted of the first formal public review period after the Draft LTCP was completed and the MAC Board approved it for public distribution.

The Original Draft LTCP was issued for public review and comment on September 12, 2016. Two public information meetings were held in September 2016 to provide information regarding the Draft LTCP to interested citizens. This initial public comment period closed on October 26, 2016. During the initial public comment period, the MAC received 27 written comments, of which 15 were from Airport tenants and users, ten were from members of the public, and two were from municipal representatives.

The top three themes of tenant and user comments include:

- Support for keeping turf Runway 06R-24L open;
- Support for keeping south parallel Runway 14R-32L open; and,
- Support for providing additional useable length on Runway 14L-32R beyond that provided by the Stopway concept recommended in the draft plan.

The City of Crystal provided a letter of support for the LTCP Preferred Alternative, while Hennepin County requested coordination in advance of any development/redevelopment initiatives along any county roadway frontage. Of the comments from members of the general public, three were related to concerns over flight patterns and aircraft noise.

A Refined Preferred Alternative was developed by MAC staff in response to public and stakeholder feedback about the original plan. An Addendum to the Draft 2035 LTCP was prepared to describe the features of and rationale behind the development of the Refined Preferred Alternative. The Addendum was published for public review and comment on March 15, 2017. A supplemental public information meeting was held on March 30, 2017, to provide more information about the Refined Preferred Alternative to interested citizens. The supplemental public comment period closed on April 14, 2017. During the supplemental public comment period, MAC received 16 additional written comments. Of the comments, 12 were from airport tenants and users, three from members of the public, and one from a municipality.

Airport users and tenants who submitted comments expressed a greater level of support for the Refined Preferred Alternative than for the original alternative. In particular, preserving a turf runway at Crystal

Airport was viewed as a positive factor by many tenants. However, some continued to express reservations about the capacity implications of closing the south parallel Runway 14R-32L.

The City of Crystal also provided a letter of support for the LTCP Refined Preferred Alternative.

The Final Draft LTCP was submitted to the Metropolitan Council on June 5, 2017, as required under Minnesota Statutes 473.165 and 473.611. The Metropolitan Council reviews LTCPs for each airport owned and operated by the MAC for consistency with the metropolitan development guide, including Thrive MSP 2040 and the Transportation Policy Plan. Metropolitan Council staff concluded that since the Refined Preferred Alternative for Crystal Airport retains its system role as a minor general aviation facility, supports the regional aviation system, and is responsive to the needs and conditions of the Airport, it is consistent with the Thrive MSP 2040 and the Transportation Policy Plan. The full Metropolitan Council provided its determination of consistency on September 13, 2017. The MAC Board voted to formally adopt the LTCP on October 16, 2017.

At the outset of the environmental review process on January 23, 2018, MAC staff solicited initial comments from various federal, state, and local agencies via electronic mail as it relates to each agency's area of expertise. Agencies were asked to submit comments for consideration during the environmental review process and were invited to an in-person agency scoping meeting held at the MAC General Offices on February 12, 2018. Agencies receiving this correspondence included the following:

- Minnesota Department of Agriculture
- Minnesota Department of Commerce
- Minnesota Department of Health – Environmental Health Division
- Minnesota Department of Natural Resources – Environmental Review Unit
- Minnesota Pollution Control Agency – Environmental Review Unit
- Minnesota Department of Transportation – Office of Environmental Stewardship
- Minnesota Board of Soil and Water Resources
- U.S. Army Corps of Engineers – Regulatory Branch
- U.S. Environmental Protection Agency – Office of Enforcement and Compliance Assurance
- U.S. Fish & Wildlife Service – Twin Cities Field Office
- Metropolitan Council
- Shingle Creek Watershed Management Commission
- City of Crystal
- City of Brooklyn Center
- City of Brooklyn Park
- Hennepin County

Representatives from the City of Crystal, Metropolitan Council, and FAA attended the February 12, 2018, agency scoping meeting. Written scoping comments were received from the Shingle Creek Watershed Management Commission on February 2, 2018, and from the U.S. Environmental Protection Agency on February 21, 2018. Comments received from these agencies were incorporated into the scope of work for

the EA/EAW. The agency scoping meeting minutes and associated correspondence are included in **Appendix K**.

Prior to initiating the environmental review process in early 2018, the MAC created a standalone website for sharing information related to the project with the public. This website provides information regarding stakeholder outreach activities, project documentation, relevant website resources, and answers to frequently asked questions. The website has been continually updated throughout the EA/EAW process and may be visited at the following URL: <https://www.metroairports.org/General-Aviation/Crystal-Airport-Environmental-Assessment.aspx>.

The MAC also developed a formal Stakeholder Engagement Plan in early 2018. The plan included coordinated efforts to inform, educate, and engage the public and Airport users as part of the EA/EAW process. The plan also explained the MAC's approach for documenting the outreach process. MAC published the plan on the project website and used it as a dynamic guide for administering a thorough and effective public involvement program. The stakeholder engagement plan is included in **Appendix L**.

The MAC convened an Airport Community Panel (ACP) for the project, which met periodically throughout the development of the Draft EA/EAW. The ACP is an advisory board representing major community stakeholder groups that are more closely involved in the EA/EAW project than the public at large. Stakeholder groups represented on the ACP included:

- City of Crystal
- City of Brooklyn Park
- City of Brooklyn Center
- Airport Tenants/Users
- Aircraft Owners and Pilots Association
- Local Citizens
- Metropolitan Airports Commission Staff
- MAC Commissioner
- Hennepin County

The ACP serves several important functions including: representing a broad range of stakeholder groups in the EA/EAW; receiving information about the EA/EAW and sharing it with constituencies; providing input to the EA/EAW as the voice of key stakeholders; and in some cases, providing technical advice to the project team. The ACP offers opinions, advice, and guidance, but the MAC has sole discretion to act on ACP recommendations. Two ACP meetings were held on August 28, 2018, and March 5, 2019.

Agendas, presentation materials, and minutes from these meetings are included in **Appendix L**.

To engage the public at large, the MAC also held a public meeting on October 30, 2018, prior to release of the Draft EA/EAW. The public meetings presented the same information provided at the August 28, 2018, ACP meeting. The presentation materials, handouts, and minutes from this event are included in **Appendix L**.

The Draft EA/EAW document was released for public review and comment on April 22, 2019. The mailing list for the draft document included all government agencies that received invitations to the February 12, 2018, scoping meeting. The notice of availability of the draft document and public hearing held May 29, 2019, was published in the local newspaper and the Minnesota Environmental Quality Board (EQB) *Monitor* newsletter and the Robbinsdale/Crystal/New Hope/Golden Valley edition of the Sun Post. Hard copies of the Draft EA/EAW were available for public review at the MAC General Offices, Crystal City Hall, Brooklyn Park City Hall, and Brooklyn Center City Hall. Electronic PDF versions of the Draft EA/EAW documents were also available for public review on the project website at <https://www.metroairports.org/General-Aviation/Crystal-Airport-Environmental-Assessment.aspx>.

A public hearing was held at Crystal City Hall on May 29, 2019, to accept comments on the Draft EA/EAW from interested citizens. The MAC also accepted written statements regarding the Draft EA/EAW from local, state, and federal government agencies, as well as from the general public, from April 22 through June 10, 2019, a period of 50 days.

During the public comment period, the MAC received two comments from the general public and seven comments from various local governments and government agencies, including verbal comments submitted at the May 29, 2019, public hearing, mailed comments, and emailed comments. These comments, and detailed matrices with responses to each comment, are included in **Appendix M**.

The public involvement process was inclusive of all residents and population groups in the study area and did not exclude any persons based on income, race, color, religion, national origin, age, or handicap.