3. Affected Environment and Environmental Consequences

3.1 Introduction

This section is organized by resource topics, with the impacts of all alternatives combined under resource headings. It provides a concise analysis of environmental impacts and conceptual measures needed to mitigate the impacts only for resources affected by at least one of the alternatives.

3.2 Identification of the Study Areas

To evaluate environmental impacts, two study areas are defined, the General Study Area and the Detailed Study Area. The General Study Area includes the areas within a 1-mile radius of the airport. The Detailed Study Area, referred to in this EA as the "project area," includes the area that may be physically disturbed (direct impacts) with the development of the Proposed Action. The timeframes for the analysis include the construction of the facilities, which is anticipated to span from 2024 through 2029 if both Phase 1 and Phase 2 are executed, and subsequent operation of the facilities.

3.3 Environmental Impact Categories Not Affected

The No Action Alternative, Proposed Action, and reasonable alternatives would not affect coastal resources, farmlands, or land use. Therefore, these resources were considered but not analyzed in detail in this EA.

- **Coastal resources**: There are no coastal zones within Missouri.
- **Land use**: Land use for the Proposed Action is classified as "Airport-related Development." The airport-related development is compatible with the surrounding on- and off-airport land uses. On airport, the airport's 2023 ALP shows the sites associated with the Proposed Action as Aeronautical Development, therefore, land use for the Proposed Action is consistent with the airport's ALP. Off-airport land use is zoned commercial/industrial. The airport sponsor has committed to making land use compatible with airport operations (refer to Appendix A for sponsor land use letter).
- **Farmlands**: The Brownleigh and Northern Tract parcels within the airport are located within a highly urbanized area. There are no areas on airport property currently being used for agriculture. The Northern Tract parcel is entirely developed and does not contain land characterized as prime or unique farmland. The Brownleigh parcel has been highly disturbed by past development activity. Approximately 4.7 acres of the Proposed Action area in the Brownleigh parcel have soils that have been designated as farmland of statewide importance (NRCS 2019). Given the urbanized area, lack of agricultural land uses within or surrounding the airport, and the site's low farmland value (based on U.S. Department of Agriculture Form AD-1006 Farmland Conversion Impact Rating), there would be no adverse effects to farmlands considered to be prime, unique, or of statewide or local importance.
- **Wetlands:** Executive Order 119900, Protection of Wetlands, requires federal agencies to avoid the adverse impacts associated with the destruction or modification of wetlands. There are no wetlands in the Proposed Action area, and construction would not take place within wetland areas (USFWS n.d.a). Therefore, there would be no impacts to wetlands.
- **Wild and scenic rivers:** The *Wild and Scenic Rivers Act of 1968*, 16 U.S.C. 1271-1287, regulates effects to rivers having remarkable scenic, recreational, geologic, fish, wildlife, historic, or cultural values. There are no rivers within St. Louis County listed in the Nationwide Rivers Inventory (NPS 2016). Therefore, there would be no impacts to wild and scenic rivers.

3.4 Air Quality

3.4.1 Regulatory Setting

In accordance with federal *Clean Air Act* (CAA) requirements, the air quality in a region or area is defined by measured concentrations of pollutants in ambient air. Air quality is a result of not only the types and quantities of atmospheric pollutants and pollutant sources in an area, but also the surface topography, size of the topological "air basin," and prevailing meteorological conditions.

3.4.1.1 National and State Ambient Air Quality Standards

CAA provides for the establishment of standards and programs to evaluate, achieve, and maintain acceptable air quality in the U.S. The U.S. Environmental Protection Agency (EPA) establishes numerical, concentration-based standards, or National Ambient Air Quality Standards (NAAQS), for pollutants determined to affect human health and the environment. The NAAQS represent the maximum allowable concentrations for six pollutants: ozone (O_3), carbon monoxide (CO), nitrogen oxides (NO_X) measured as nitrogen dioxide (NO_2), sulfur oxides, respirable particulate matter (including particulate matter equal to or less than 10 microns in diameter [PM_{10}] and particulate matter equal to or less than 2.5 microns in diameter [$PM_{2.5}$]), and lead (Pb). The CAA also gives authority to states to establish air quality rules and regulations aimed at meeting air quality standards. The State of Missouri has adopted the NAAQS, as presented in Table A-1 (Appendix B) and has also state standards for hydrogen sulfide (H_2S) and sulfuric acid (H_2SO_4).

EPA classifies the air quality in a region or area by comparing monitored concentrations of criteria pollutants with the NAAQS. Areas are designated as "attainment," "nonattainment," "maintenance," or "unclassified" on a pollutant-specific basis. Attainment means that the air quality measurements for that pollutant are lower than the NAAQS; nonattainment indicates that the pollutant levels exceed the NAAQS; maintenance indicates that an area was previously designated nonattainment but is now in attainment; and unclassified indicates that there is not enough information, so the area is considered attainment for that pollutant.

The CAA helps ensure that human health and the environment are protected from adverse effects of air pollution. Much of the responsibility for controlling air pollution is delegated to the state level. Each state designated as nonattainment or maintenance for any NAAQS must develop a State Implementation Plan (SIP), which is a compilation of regulations, strategies, schedules, and enforcement actions designed to move the state into compliance with all NAAQS.

3.4.1.2 General Conformity

The CAA General Conformity Rule (40 CFR Section 93 Subpart B) requires that federal activities must conform with the requirements of the applicable SIP or federal implementation plan. Federal agencies, like the FAA, are prohibited from funding, approving, or permitting projects or actions that would cause a new violation of the NAAQS, contribute to an increase in the frequency or severity of violations of NAAQS, or delay the timely attainment of any NAAQS or NAAQS compliance milestones. The General Conformity Rule applies only to federal actions in nonattainment or maintenance areas. Only the preferred alternative must undergo conformity analysis.

3.4.1.3 State and County Air Permitting and Compliance

The Missouri Department of Natural Resources (MoDNR) works to protect, improve, and maintain Missouri's air quality as directed by the federal CAA and the Missouri Air Conservation Law. MoDNR's Air Pollution Control Program issues construction and operating permits, inspects sources, collects and

analyzes air monitoring data, and develops SIPs. Construction permits, also called New Source Review (NSR) permits, allow an applicant to construct and operate a new air emission source or modify an existing facility or source. Construction permits are required prior to commencing construction. Construction permits focus on the activities that may increase air emissions, for example, changes in operation, addition of equipment, changes in fuel or raw materials, or the relocation of sources. The MoDNR oversees several types of NSR or construction permits, including major, minor and *de minimis* permits (MoDNR 2020b). In St. Louis County, permitting and compliance for some sources of criteria air pollutants are overseen by the St. Louis County Department of Public Health, Environmental Services Division, Air Pollution Control (St. Louis County n.d.b).

3.4.2 Affected Environment

The airport, existing Boeing facilities, and areas that would encompass the Proposed Action are in the unincorporated area of St. Louis County, Missouri. As of April 2023, St. Louis County is designated by EPA as a moderate nonattainment area for the 8-hour ozone NAAQS. In the past, St. Louis County has also experienced high levels of $PM_{2.5}$, but the area was redesignated to maintenance for the 1997 primary annual $PM_{2.5}$ NAAQS (level of 15 micrograms per cubic meter) in October 2018. The 1997 $PM_{2.5}$ standard has been revoked in attainment and maintenance areas, so the General Conformity Rule does not apply for this pollutant. The project area is designated as attainment or unclassified for all other criteria pollutants (EPA 2023b).

Boeing currently has a Title V Operating Permit (Permit Number: OP2021-014) issued by the MoDNR and renewed on June 7, 2021. Title V of the CAA Amendments of 1990 requires states and local agencies to issue operating permits to major stationary sources. Under Title V, a major stationary source has the potential to emit more than 100 tons per year (tpy) of any one criteria air pollutant or precursor pollutant, 10 tpy of a hazardous air pollutant (HAP), or 25 tpy of any combination of HAPs. The purpose of the permitting rule is to establish regulatory control over large, industrial-type activities and monitor their impacts on air quality. Section 112 of CAA defines the sources and kinds of HAPs that are to be regulated.

The Installation Description in the Title V permit states, "The Boeing Company, designs, develops, manufactures, integrates, and supports a variety of aerospace, defense, and security products and services. These include military and commercial aircraft, helicopters, missiles, space launch vehicles and other space systems, and sensing systems. Equipment includes paint spray booths, halogenated solvent degreasers, and boilers. The installation is subject to 40 CFR Part 63 Subpart GG, National Emission Standards for Aerospace Manufacturing and Rework Facilities, and has potential emissions greater than operating permit major source thresholds for all pollutants" (MoDNR 2021a).

3.4.3 Thresholds of Significance

As stated in FAA Order 1050.1F, Exhibit 4-1, the FAA's significance threshold for air quality is whether "the action would cause pollutant concentrations to exceed one or more of NAAQS, as established by EPA under CAA, for any of the time periods analyzed, or to increase the frequency or severity of any such existing violations" (FAA 2015).

The environmental consequences to local and regional air quality conditions that would result from the Proposed Action are evaluated based on the increases in regulated pollutant emissions relative to existing conditions, the No Action Alternative, and the relevant regulatory thresholds. Impacts on air quality in NAAQS nonattainment or maintenance areas are considered to conflict with the plans to achieve standards (the applicable SIP) and result in significant impacts if the net changes in project-related pollutant emissions would result in any of the following:

- Cause or contribute to a violation of any NAAQS or state ambient air quality standard.
- Increase the frequency or severity of a violation of any ambient air quality standard.
- Delay the attainment of any standard or other milestone contained in the SIP or permit limitations.

The General Conformity Rule establishes federal *de minimis* thresholds in 40 CFR 93.153(b) for individual criteria pollutants and their precursors. The applicable thresholds depend on the EPA-designated attainment status for each NAAQS pollutant in the project area. The thresholds are only applicable to increases of pollutants and their precursors associated with federal actions in nonattainment and maintenance areas. These emissions rates (represented in tpy) are used to delineate federal actions with the potential to conflict with the applicable SIP or substantially and adversely affect air quality. If the federal action includes sources that require NSR permitting, that portion of the action is not subject to conformity determination (40 CFR 93.153(d)). As a result, sources that must obtain air permits (for example, boilers, paint booths, emergency generators) are not required to be included in the emissions totals used to evaluate the applicability of the General Conformity Rule. Annualized emissions from sources that do not require permits (for example, mobile sources, construction equipment, aircraft and airport ground support equipment [GSE] operations, employee commute vehicles) must be estimated and compared with regulatory thresholds to determine the applicability and stringency of requirements.

Table A-2 (Appendix B) presents the applicable general conformity *de minimis* thresholds. The General Conformity Rule applicability thresholds are used in NEPA analysis for determination of the relative significance of project impacts. With respect to the General Conformity Rule, effects of the Proposed Action on air quality would be considered significant if the federal action by FAA to approve the Proposed Action would result in any emissions increase greater than the applicable *de minimis* thresholds.

Other regulatory thresholds that apply to permitting in Missouri include the Permitting *de minimis* Levels/Federal Significance Levels for criteria pollutants (presented in tpy) in Table B-4 (Appendix B) (MoDNR 2020b, n.d.a, n.d.b, n.d.e). In addition, according to 10 Code of State Regulations 6.060 (5)(D), an applicant must submit an air quality analysis if the project's potential HAP emissions exceed the Screening Modeling Action Levels established by the MoDNR Air Pollution Control Program (APCP). Although pollutant-specific significant impact levels have not been defined for HAPs, the MoDNR APCP has adopted thresholds equal to 4% of the Risk Assessment Levels defined in the MoDNR HAPs, Screening Modeling Action Levels, and Risk Assessment Levels table (MoDNR 2020a, 2022b).

If results of the emissions estimates and the air quality impact analysis indicate potential for significant air quality impacts, required mitigation measures must be detailed, along with a plan and responsible parties to implement enforceable mitigation monitoring and reporting requirements.

3.4.4 Environmental Consequences

3.4.4.1 No Action

Implementation of the No Action Alternative would not result in a change in current conditions. No demolition or construction would occur, and operations would not change. Therefore, no impacts to air quality would occur.

3.4.4.2 Proposed Action

The Proposed Action would result in emissions from construction, demolition, and operation of facilities for defense-related aircraft production and testing. To construct the facilities, equipment would be used to demolish existing structures, clear vegetation, and grade the chosen parcels. Buildings, roads, parking areas, and other infrastructure improvements would then be constructed in two phases.

Stationary sources associated with the Proposed Action would include paint booths, boilers and heaters, fire pumps, and standby generators. These sources will require NSR and air permitting. Under NAAQS, emissions from sources subject to NSR and permitting are not included in evaluation of general conformity applicability; however, under NEPA, these emission must still be disclosed, even though they will not be counted toward the significance determination. Boeing proposes to permit the stationary sources associated with each phase of the Proposed Action separately because they will be independently awarded by different federal agencies, would be separated by more than 2 years, and will manufacture different aircraft types. Emissions from point sources for each phase would be capped to less than 40 tpy

for volatile organic compounds (VOCs) and NO_x for each phase (including Building 69) to meet regulatory de minimis levels required for a MoDNR Section (5) permit (MoDNR 2020b).

Operation of mobile sources would also directly affect the amount and type of emissions that would result from the Proposed Action and indirectly affect local air quality. Mobile sources of air emissions include "on-road sources" and "nonroad sources." On-road mobile sources include automobiles and light- and heavy-duty trucks used for employee commutes and material transport. Nonroad sources include aircraft, GSE, and various types of construction equipment. Typical aircraft GSE includes equipment to provide services such as air conditioning, air start, towing, fueling, and emergency response. Emissions from these sources are counted toward general conformity significance determination.

3.4.4.2.1 Construction and Demolition Emissions

Although temporary by nature, construction can degrade air quality mainly because of dust and emissions from fuel combustion in construction vehicles. Fugitive dust emissions may occur during excavation, when materials are hauled, and when vehicles travel to and from the project site on paved and unpaved roads.

Adverse impacts on local and regional air quality would result from the Proposed Action construction and demolition activities. Construction and demolition activities would generate air pollutant emissions primarily from site-disturbing activities such as vegetation clearing, grading, filling, compacting, and trenching; operating construction and demolition equipment; and evaporative emissions from architectural coatings, such as painting. Fugitive dust emissions would be greatest during the initial site preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity. Construction and demolition activities would incorporate best management practices (BMPs) and control measures (such as frequent use of water for dust-generating activities) to limit fugitive particulate matter emissions, such as dust, from leaving the work site. Construction workers commuting daily to and from the construction site in their personal vehicles would also result in criteria pollutant emissions.

Construction and demolition emissions were estimated approved emission factors from sources such as EPA's Compilation of Air Pollutant Emission Factors (AP 42) and the MOtor Vehicle Emission Simulator 3 (MOVES3). MOVES3 is an emission modeling system developed by EPA to estimate emissions for mobile sources at the national, county, and project level for criteria air pollutants, greenhouse gas (GHG), and air toxics. Emission calculations have been conducted to estimate total annual air emissions from construction and demolition activities for comparison with applicable thresholds of significance. Table B-3 (Appendix B) summarizes the results; Appendix B provides details of the inputs, assumptions, and results.

3.4.4.2.2 Operational Emissions

No significant impacts on local and regional air quality would result from operation of the Proposed Action. The operations are described in Section 2.2.2.

Operational emissions were estimated using approved emission factors from sources such as the FAA's Aviation Environmental Design Tool (AEDT) Version 3e and MOVES3. Emission calculations have been conducted to estimate operational emissions of the Proposed Action for comparison with applicable thresholds of significance. Table B-4 (Appendix B) summarizes the results.

Owners and operators of all proposed and existing facilities that are significant sources of air emissions must obtain approval from appropriate authorities to construct, modify, and operate the sources. The MoDNR will review the air emissions estimated for the Proposed Action to confirm that the construction and operation would comply with applicable state and federal laws and regulations. In this case, the Proposed Action must obtain approval in the form of a construction air permit for the stationary air emission sources including painting and assembly facilities, boilers and heaters, fire pumps, and emergency generators, before beginning construction of the project. MoDNR will confirm that air emissions from the sources are within applicable technology-based guidelines and would be designed and operated to be protective of human health. After approval and construction of the project, and as part of

the construction air permit requirements, the Proposed Action must obtain required operating permits, including modification of the facility's Title V permit. Continuous compliance with the construction permit conditions and Title V air permit limits must be demonstrated.

Appendix B contains detailed inputs, assumptions, and calculations used to estimate the annual air emissions from the operation of the Proposed Action.

3.4.4.2.3 General Conformity Applicability

As documented in the previous sections, construction and operational emissions have been estimated for the Proposed Action. Project-related emissions from sources subject to NSR and permitting are not included in evaluation of general conformity applicability. The annualized criteria pollutant emissions estimated for operation of sources not subject to permitting and the emissions estimated for project construction during the peak construction year (2025) have been summed for comparison with the applicable general conformity *de minimis* levels in Table B-5 (Appendix B). As indicated previously, the General Conformity Rule applicability thresholds are used in NEPA analysis for determination of the relative significance of potential project impacts.

None of the applicable *de minimis* thresholds would be exceeded, indicating that that the project can be assumed to conform, and no further analysis under the General Conformity Rule is required. The results of this General Conformity Rule evaluation indicate that the Proposed Action would not result in emissions that would exceed applicable federal de minimis thresholds, conflict with the applicable SIP, or substantially or adversely affect air quality. A summary of emissions subject to the General Conformity Rule and the applicable thresholds can be found in Table 3-1.

Table 3-1. Estimated Emissions and General Conformity Applicability

Emission Source	VOC	CO	NO_X	SO_2	PM_{10}	$PM_{2.5}$
Operational Emissions from Sources Subject to General Conformity	2.33	38.90	4.65	0.20	0.41	0.13
Construction Emissions (Peak Construction Year 2025)	0.24	85.36	7.34	4.87	24.22	3.66
de minimis Levels (tpy)	100	N/A	100	N/A	N/A	N/A
Threshold Exceeded for Any Activity?	No	N/A	No	N/A	N/A	N/A

Note: Estimated emissions rates are presented in units of tons per year.

N/A = No general conformity *de minimis* threshold

3.4.5 Proposed Mitigation

Since all project-related emissions are less than *de minimis*, the Proposed Action will not have any significant impact on Air Quality and no mitigation is required. For each phase of the Proposed Action, necessary air permits for painting and assembly facilities, boilers and heaters, fire pumps, emergency generators, and any other associated stationary source shall be obtained before the start of construction.

Air quality BMPs would be implemented during construction, demolition, and operations to reduce exhaust emissions and fugitive dust. These may include all or a combination of the following:

- Use vehicles that are equipped with zero-emission technologies or Tier 4 engines.
- Establish an anti-idling policy for internal combustion vehicles.
- Use onsite renewable electricity generation and/or grid-based electricity rather than diesel-powered generators or other equipment when possible.
- Where appropriate, retrofit older nonroad engines with an exhaust filtration device before it enters the construction site to capture diesel particulate matter.

- Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative, where appropriate.
- Where appropriate, install wind fencing.

3.5 Biological Resources

Biological resources consist of plants and animals and their habitats. These resources provide aesthetic, recreational, and socioeconomic benefits to society. This section describes the plant and animal species that occur, or are likely to occur, in the project area.

Three federal laws are applicable to the analysis of biological resources for the project:

- The *Migratory Bird Treaty Act* (MBTA), as amended, implements various treaties and conventions between the U.S. and Canada, Japan, Mexico, and Russia for the protection of migratory birds. Under MBTA, taking, killing, or possessing listed birds is unlawful, unless permitted by regulation. Species listed under MBTA are protected even if they are year-round residents of a region.
- The *Bald and Golden Eagle Protection Act*, as amended, provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the taking, possessing, and buying or selling of such birds.
- The *Endangered Species Act*, as amended, requires the government to protect threatened and endangered plants and animals (listed species) and the habitats upon which they depend. The *Endangered Species Act* requires federal agencies to ensure that any action it authorizes, funds, or conducts does not adversely affect listed species or "destroy or adversely modify" critical habitat for that species. "Critical habitat" is defined as a specific geographic area that contains features for the conservation of an endangered species and may require special management and protection.

3.5.1 Affected Environment

A Biological Evaluation (BE) (Boeing 2023), provided in Appendix C, was prepared to support development of this EA and was developed based on review of remote data and information obtained during a site visit conducted in March 2023. The BE focused on federally listed species subject to the provisions of the *Endangered Species Act*; however, state-listed species were included in an appendix to the BE.

The Northern Tract parcel is fully built out and devoid of vegetative communities. Sightings of wildlife species within the Northern Tract parcel during the March 2023 survey events were limited to introduced avian species that commonly occur in developed or urban environments. Habitat within the Brownleigh parcel is typically made up of open fields interspersed with varying degrees of tree cover. Forested areas within the parcel consist primarily of hardwood species. Observations of wildlife species within the Brownleigh parcel were common, particularly for avian species (Boeing 2023). Species observed were those typical for urban or suburban areas.

The U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Conservation report (USFWS n.d.b), USFWS Environmental Conservation Online System, and the Missouri Department of Conservation indicate that 24 state- and/or federally listed species Table 3-2 have the potential to occur on the Brownleigh and Northern Tract properties. Federally and state-listed species are collectively referred to as special-status species within this EA. There are no designated critical habitats within the project areas.

Table 3-2. Special-status Species Potentially Occurring within Project Area

Species Type	Common Name	Scientific Name	State Status	Federal Status
Mammals	Gray bat	*Myotis grisescens*	Endangered	Endangered
	Indiana bat	*Myotis sodalis*	Endangered	Endangered
	Northern long-eared bat	*Myotis septentrionalis*	Endangered	Endangered
	Tricolored bat	*Perimyotis subflavus*		Under Review/ Proposed Endangered
	Eastern spotted skunk	*Spilogale putorius*	Endangered	
Birds	Bachman's sparrow	*Peucaea aestivalis*	Endangered	
	Northern harrier	*Circus hudsonius*	Endangered	
	Rufa red knot	*Calidris canutus rufa*		Threatened
	Flathead chub	*Platygobio gracilis*	Endangered	
	Lake sturgeon	*Acipenser fulvescens*	Endangered	
	Pallid sturgeon	*Scaphirhynchus albus*	Endangered	Endangered
Amphibians	Eastern hellbender	*Cryptobranchus alleganiensis*	Endangered	Endangered
Mollusks	Spectaclecase	*Cumberlandia monodonta*	Endangered	Endangered
	Elephant-ear	*Elliptio crassidens*	Endangered	
	Snuffbox	*Epioblasma triquetra*	Endangered	
	Pink mucket	*Lampsilis abrupta*	Endangered	Endangered
	Scaleshell	*Leptodea leptodon*	Endangered	Endangered
	Sheepnose	*Plethobasus cyphyus*	Endangered	
Invertebrates	Monarch butterfly	*Danaus plexippus*		Under Review
Plants	Decurrent false aster	*Boltonia decurrens*	Endangered	Threatened
	Eastern prairie white-fringed orchid	*Platanthera leucophaea*	Endangered	Threatened
	Mead's milkweed	*Asclepias meadii*	Endangered	Threatened
	Western prairie white-fringed orchid	*Platanthera praeclara*	Endangered	Threatened
	Running buffalo clover	*Trifolium stoloniferum*	Endangered	

Sources: Boeing 2023; USFWS n.d.a; MDC n.d.a; MDC 2022.

Suitable habitat for seven listed species was observed within the Brownleigh parcel during the March 2023 survey events. Forested areas within the Brownleigh parcel may provide summer refugia for Indiana bat (*Myotis sodalis*), northern long-eared bat (*Myotis septentrionalis*), and tricolored bat (*Perimyotis subflavus*). There is suitable habitat to potentially support the eastern spotted skunk (*Spilogale putorius*), Bachman's sparrow (*Peucaea aestivalis*) (nesting), and northern harrier (*Circus hudsonius*) (foraging habitat only). Suitable feeding habitat for the monarch butterfly (*Danaus plexippus*) may be present within unmaintained brushy areas during spring and fall migrations if nectaring plant species occur, and suitable breeding habitat may occur if milkweeds (*Asclepias spp.*) occur. No remnant fruiting structures of milkweeds were observed during site surveys (Boeing 2023).

Abandoned structures within the Northern Tract parcel may be used by tricolored bats. There is no habitat on either parcel for gray bat (*Myotis grisescens*), rufa red knot (*Calidris canutus rufa*), or the fish, amphibian, mollusk, and plant species listed in Table 3-2. (Boeing 2023)

Ten bird species protected under MBTA potentially occur near the project area: American golden-plover (*Pluvialis dominica*), bald eagle (*Haliaeetus leucocephalus*), black-billed cuckoo (*Coccyzus*

erythrophthalmus), chimney swift (*Chaetura pelagica*), lesser yellowlegs (*Tringa flavipes*), Kentucky warbler (*Oporornis formosus*), prothonotary warbler (*Protonotaria citrea*), red-headed woodpecker (*Melanerpes erythrocephalus*), rusty blackbird (*Euphagus carolinus*), and wood thrush (*Hylocichla mustelina*) (USFWS n.d.a).

3.5.2 Thresholds of Significance

As stated in FAA Order 1050.1F, Exhibit 4-1, a significant impact in this category would result if USFWS 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.

A significant impact to biological resources is also defined as unpermitted "take" of a species that is state endangered or protected under MBTA or the *Bald and Golden Eagle Protection Act* or a loss or impairment of sensitive or other native habitats that negatively affect the population of a species.

3.5.3 Environmental Consequences

3.5.3.1 No Action

No new construction or development activities are proposed under the No Action Alternative. Therefore, no impacts on biological resources would be anticipated.

3.5.3.2 Proposed Action

The Proposed Action would have minor, long-term, direct, and indirect adverse impacts on vegetation and wildlife from the conversion of the previously developed but currently overgrown and wooded areas of the Brownleigh parcel to developed impervious and landscaped areas. Impacts would be minor because of the low quality of habitat and because wildlife near the Proposed Action area is species that are tolerant of noise and human activity common in urban environments.

The Proposed Action would have a minor, short-term, direct adverse impact on wildlife from disturbances from noise, human activity, construction, and heavy equipment use. Some injury and/or mortality to less mobile wildlife would be expected for those animals that could not easily vacate the area during construction, but no population-level effects to any common wildlife species would be expected. It is expected that most wildlife would avoid the active construction sites. If common wildlife species are observed in the construction areas, efforts would be made to allow them to leave the area.

Seven special-status species have potential to occur in the project area, including the Indiana bat, northern long-eared bat, tricolored bat, eastern spotted skunk, Bachman's sparrow, northern harrier, and monarch butterfly.

Tree clearing in the Brownleigh parcel and abandoned building demolition in the Northern Tract parcel would result in minor indirect impacts to listed bat species due to habitat alteration. Tree removal would occur, if possible, during the winter season (November 1 to March 31) to avoid direct impacts to listed bat species. If tree clearing would not be feasible within the winter season due to construction schedules, surveys by a USFWS-permitted biologist would be conducted and USFWS would be consulted before any tree clearing. Presence or absence surveys for tricolored bats would be conducted before demolition of abandoned structures outside of the winter season. Therefore, FAA determined that the Proposed Action *may affect but is not likely to adversely affect* the Indiana bat, northern long-eared bat, and tricolored bat. USFWS concurred with FAA's determination in an email dated May 23, 2023. Appendix C includes the biological survey prepared for the Brownleigh parcel and USFWS consultation documentation.

As a candidate species, the monarch butterfly is not yet listed or proposed to be listed. Where feasible, native species and pollinator-friendly plants would be incorporated into landscaped areas. Therefore, FAA

determined that the Proposed Action *may affect but is not likely to adversely affect* the monarch butterfly. Refer to Appendix C for additional information.

Implementation of the Proposed Action may result in displacement and loss of habitat for the state endangered eastern spotted skunk and Bachman's sparrow. Populations of the eastern spotted skunk are scattered and rare in Missouri (MDC n.d.a), and the Missouri Natural Heritage Program's Heritage Search (MDC n.d.b) does not list eastern spotted skunk or Bachman's sparrow as occurring in St. Louis County. Therefore, there is a low likelihood of these species occurring in the project area and being adversely affected by the Proposed Action. The Proposed Action is unlikely to affect the northern harrier because there is comparable foraging habitat for this species in the nearby vicinity. No population-level effects to state-listed wildlife species would be expected.

The red-headed woodpecker is a year-round resident and MBTA-protected species with potential to occur in the Brownleigh parcel. Although the red-headed woodpecker was not observed during biological site surveys, multiple cavities were observed onsite. The Proposed Action could result in loss of nesting sites and displacement of resident red-headed woodpeckers. Before removal of trees containing cavities, red-headed woodpecker surveys would be completed. To protect nesting birds protected under MBTA, tree removal would occur, if possible, outside of the typical bird breeding season, and surveys for nesting birds would be conducted before any brush clearing activities during the bird breeding season to avoid impacts.

With implementation of proposed protection measures, no significant impacts to biological resources would occur.

3.5.4 Proposed Mitigation

Species-specific protection measures and BMPs will be required during clearing activities because listed species may occur on the properties. These practices include the following avoidance and minimization measures:

- Complete presence or absence survey of abandoned structures for tricolored bat before demolition that occurs outside of the winter season (November 1 to March 31).
- Conduct tree removal/trimming activities during the winter season after bat pups have fledged. If clearing activities cannot be accomplished within the winter season, consultation with the local USFWS office and surveys would be conducted before cutting trees in the Brownleigh parcel.
- Conduct nesting bird surveys before any tree or brush clearing activities during the bird breeding season. If active nests are observed, stop-work orders would be put in place and the area around the nest cordoned off until the birds are fully fledged, and nest sites are no longer active.
- Conduct year-round, red-headed woodpecker surveys before removal of trees containing cavities.
- Where feasible, incorporate native species and pollinator-friendly plants into landscaped areas.

3.6 Greenhouse Gas Emissions and Climate Change

Climate change is a global problem, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. GHGs have long atmospheric lifetimes (1,000 to several thousand years). GHGs persist in the atmosphere long enough to be dispersed around the globe. Although the lifetime of any GHG molecule depends on multiple variables and cannot be determined with any certainty, it is understood that more carbon dioxide (CO_2) is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration.

Global warming and the associated changes in global climate are predicted to result in negative environmental, economic, and social consequences for the U.S. and the world. Federal, state, and local agencies are preparing climate plans and taking actions to reduce GHG emissions.

3.6.1 Affected Environment

The National Climate Assessment (USGCRP 2018) finds that in the Midwest, extreme heat, heavy downpours, and flooding will affect infrastructure, health, air, and water quality. Major storm events are occurring with increasing frequency and intensity. Missouri has not developed a statewide adaptation plan (Georgetown Law n.d.). Per EPA, most of Missouri has warmed 1/2 to 1 degree Fahrenheit in the last century, and floods are becoming more frequent. From the National Climate Assessment, additional state-specific climate change impacts could include:

- Heavy Precipitation and Flooding: Climate change is likely to increase the frequency of floods in Missouri. Over the last half century, average annual precipitation in most of the Midwest has increased by 5 to 10 percent. But rainfall during the four wettest days of the year has increased about 35 percent, and the amount of water flowing in most streams during the worst flood of the year has increased by more than 20 percent.
- Summer droughts are likely to be more severe: Higher evaporation and lower summer rainfall are likely to reduce river flows.
- Impacts to navigation and riverfront communities: Increased flooding could damage properties and close rivers to navigation. Summer drought could also close rivers to navigation.
- Tornadoes: Research is ongoing to learn whether tornadoes would change frequency in the future.
- Agriculture: Climate change could have both adverse and beneficial effects on farming. Hot weather causes cows to eat less, produce less milk, and grow more slowly; it could threaten their health. Hotter summers are likely to reduce yields of corn. But higher concentrations of atmospheric CO_2 increase crop yields, and that fertilizing effect is likely to offset the harmful effects of heat on soybeans, assuming that adequate water is available. However, on farms without irrigation increasingly severe droughts could cause more crop failures. More severe droughts or floods would also hurt crop yields.
- Human Health: Concerns like heat stroke and dehydration resulting from higher temperatures, exacerbated in vulnerable people with pre-existing health issues. Rising temperatures can also increase the formation of ground-level ozone that can aggravate lung diseases like asthma and lead to premature death. Climate change may also increase the length and severity of the pollen season for allergy sufferers.

Although the airport is in St. Louis County, it is operated by the St. Louis Airport Authority, which is majority controlled by officials from the City of St. Louis. As such, portions of emissions from the airport are included within both the government and community GHG inventories.

In April 2017, the City of St. Louis published their Climate Action and Adaptation Plan (City of St Louis, 2017). This climate planning document builds on existing efforts and takes the City's objectives on climate protection to the next stage. The Climate Action and Adaptation Plan outlines in detail the strategies that will be required to achieve an 80% reduction in City-wide GHG emissions by 2050 and implement adaptation measures to establish and build climate resilience.

The airport is a leader in sustainable practices and is committed to use of alternative fuels to power its fleet vehicles. The Mayor's Sustainability Action Agenda set a goal to expand use of alternative fuels to 85% of the airport's fleet. In the 2017 Climate Action and Adaptation Plan, the airport was reported to power 79% of its fleet with alternative fuels including biodiesel, biofuel, compressed natural gas, electric, propane, and diesel electric. Biodiesel fuel use was the most prominent, powering 41% of airport fleet vehicles (City of St. Louis 2017).

3.6.2 Thresholds of Significance

FAA has not identified specific factors to consider in making a significance determination, and as stated in FAA Order 1050.1F, Exhibit 4-1, FAA has not established a significance threshold for GHGs or climate change.

The most common GHGs emitted from natural processes and human activities include CO_2, methane (CH_4), and nitrous oxide (N_2O). In emissions inventories, GHG emissions are typically reported as metric tons of carbon dioxide equivalent (CO_2e). CO_2e is calculated as the product of the mass emitted of a given GHG and its specific global warming potential. $CH_4$and N_2O have much higher global warming potential than CO_2, but CO_2 is emitted in higher quantities and accounts for the majority of GHG emissions in CO_2e, both from commercial developments and from human activity in general.

3.6.3 Environmental Consequences

3.6.3.1 No Action

Under the No Action Alternative, the construction and demolition activities would not occur. There would be no changes to the existing conditions. Therefore, there would be no impacts from GHG and no impacts from climate change.

3.6.3.2 Proposed Action

3.6.3.2.1 Construction and Demolition GHG Emissions

GHG emissions associated with construction and demolition were estimated using approved emission factors from sources such as EPA's Compilation of Air Pollutant Emission Factors (AP 42) and MOVES3. MOVES3 is an emission modeling system developed to estimate emissions for mobile sources at the national, county, and project level for criteria air pollutants, GHGs, and air toxics. Emission calculations have been conducted to estimate total annual GHG emissions from construction and demolition activities and results are summarized in Table 3-2, and details of the inputs, assumptions, and results are provided in Appendix B.

3.6.3.2.2 Operational GHG Emissions

Operations associated with the Proposed Action will generate GHG emissions. Sources of operational GHG emissions associated with the Proposed Action include the following:

- Sources of direct emissions that are controlled or owned by Boeing (Scope 1 emissions in GHG inventories):
  - Stationary Sources
    - Boilers, heaters
    - Emergency generators
    - Fire pumps
    - Painting facilities
    - Maintenance hangars
    - Fuel storage and dispensing
    - Building heating, ventilation, and air conditioning (HVAC) or refrigeration
  - Mobile Sources
    - Aircraft operations
    - GSE
    - Hush houses
- Source of indirect GHG emissions associated with the project-related purchase of electricity, steam, heat, or cooling (Scope 2 emissions):
  - Electricity usage

- Other sources of emissions that would result indirectly from implementation of the Proposed Project, such as purchased goods and services and waste management, (Scope 3 emissions).
  - Increased worker commutes (construction employees and 800 to 1000 "net new" Boeing employees)

Operational emissions were estimated using approved emission factors from sources such as the FAA's AEDT Version 3e and MOVES3. Emission calculations have been conducted to estimate operational emissions of the proposed project for comparison to applicable thresholds of significance. Results are summarized in Table 3-3. Appendix B contains detailed inputs, assumptions, and calculations used to estimate the annual air emissions from the operation of the Proposed Action.

Table 3-3. Carbon Dioxide Equivalent (tons)

Scope	Activity	Year 2024 (CO_2e)	Year 2025 (CO_2e)	Year 2026 (CO_2e)	Year 2027 (CO_2e)	Year 2028 (CO_2e)	Year 2029 (CO_2e)	Year 2030 (CO_2e)	Steady State (CO_2e)
1	Construction Equipment	1,012	1,364	518	-	1448	1,329	-	-
1	Construction Deliveries	11	14	4	-	13	12	-	-
3	Construction Commutes	6,424	8,737	3,404	-	8,038	12	-	-
1	Fugitive Dust	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1	Aircraft and GSE	-	-	95	284	378	378	378	378
1	Aircraft Testing	-	-	5	16	21	21	21	21
1	Nonroad Equipment	-	-	12	25	37	37	37	37
3	Employee and Delivery Commutes	955	1,408	1,709	2,385	2,744	3,465	3,739	3,739
2	Electricity Usage	9,507	14,326	17,667	25,151	29,483	35,034	40,960	40,960
1	Paint & Assembly	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1	Boilers & Heaters	-	-	4,559	54,711	54,711	58,986	106,003	106,003
1	Fire Pumps	-	-	-	-	-	22	261	261
1	Standby Generators	-	-	-	-	-	10	119	119

Scope is to identify if it is a direct, indirect utility, or indirect third party source. For example, Aircraft is Scope 1–- direct, employee commutes are Scope 3 – third party.

CO_2e = Carbon dioxide equivalent, calculated using Global Warming Potentials from 40 CFR 98 Table A-1.

- = no activity that year

N/A = source type does not emit GHGs

3.6.4 Proposed Mitigation

The FAA has not identified specific factors to consider in making a significance determination for GHG emissions; therefore, no mitigation measures are required to mitigate the GHGs attributed to the Proposed Action. Although not specific to GHG emissions, BMPs implemented to reduce impacts to air quality would also reduce GHG emissions.

3.7 Historical, Architectural, Archaeological, and Cultural Resources

FAA evaluates direct and indirect impacts from federal actions on historic, architectural, archaeological, and other cultural resources under Section 106 of the *National Historic Preservation Act of 1966* (NHPA) (54 U.S.C. § 300101 et seq.), the principal statute concerning cultural resources. Section 106 requires federal agencies to take into account the effects of their undertakings on historic properties, defined as "any precontact or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP [National Register of Historic Places], which is maintained by the Secretary of the Interior" (36 CFR 800.16), and to consult with the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officers, and other parties to develop and evaluate alternatives or modifications to the undertaking where necessary to avoid, minimize, or mitigate adverse effects. The independent federal agency overseeing federal historic preservation and tribal programs, the Advisory Council on Historic Preservation (ACHP), must be afforded a reasonable opportunity to comment on such undertakings subject to Section 106. The ACHP limits its involvement in individual Section 106 reviews to situations that meet the criteria in Appendix A of the regulations at 36 CFR Part 800.

The scale of the undertaking and the extent of FAA involvement define the scope of the Section 106 review, including FAA's obligation to identify historic properties, assess effects, and develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize, or mitigate adverse effects on historic properties. In this case, FAA's role is limited to approval or disapproval of an ALP depicting the project sponsor's proposal.

Cultural resources may include archaeological resources (any site that contains material remains of past human life or activities) or other places or items that possess cultural importance to individuals or a group.

Properties listed in the NRHP or recommended eligible for listing in the NRHP are treated the same under Section 106 of the NHPA. After cultural resources within the area of potential effects (APE) are identified and evaluated, effects evaluations are completed to determine whether the Proposed Action has no effect, no adverse effect, or an adverse effect on historic properties.

3.7.1 Affected Environment

FAA is obligated under 36 CFR 800.4(b)(1) to make a "reasonable and good faith effort" to identify historic properties potentially affected by the undertaking. Because of the nature of this action involving demolition and replacement of manufacturing, industrial, and airport infrastructure with proposed similar infrastructure of approximately the same footprint, primary impacts of this undertaking are limited to those sites and the FAA focused its identification efforts in those areas.

An APE is defined as the geographic area(s) within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties (36 CFR 800.16(d)). The determination of the APE considers the character of a project area and the potential for resources to be found. For this project, the APE consists of two discontiguous areas within the Northern Tract and Brownleigh parcels where ground-disturbing activities may occur and the surrounding area where foreseeable visual changes may be perceivable. The project footprint, which includes all ground-disturbing activities, will occur within a 75-acre portion of the Northern Tract parcel and 110-acre portion of the Brownleigh parcel. A small buffer was applied to the project footprint to account for the potential for changes within the viewshed. The total APE is 256 acres, including the 117-acre Northern Tract parcel and 139-acre Brownleigh parcel.

The APE does not extend beyond the immediate vicinity of the Proposed Action due to the scale of the proposed facilities, commercial and industrial nature of the existing setting, and separation from residential and sensitive resources by existing visual buffers. Figures 3-1 and 3-2 show the APEs for the Northern Tract and Brownleigh parcels, respectively. The APE was part of the May 2023 SHPO submittal. SHPO's response in June 2023 did not include any comments on the APE.

LEGEND:

- Area of Potential Effects
- Parcel Boundary
- Building 1
- Building 2
- Building 3
- Building 42
- Building 45 (Demo'd)
- Building 48

N

BASE MAP SOURCE:
Esri World Imagery

0 250 500
FEET

St. Louis Expansion, St. Louis County, Missouri

Figure 3-1
Northern Tract

DATE: 7/27/2023

Jacobs

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LEGEND:

- Area of Potential Effects
- Parcel Boundary

N

BASE MAP SOURCE:
Esri World Imagery

0 250 500
FEET

St. Louis Expansion,
St. Louis County, Missouri

Figure 3-2
Brownleigh

DATE: 7/27/2023

Jacobs

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3.7.1.1 Identification of Historic Properties

Secretary of the Interior-qualified staff conducted a literature review of the study area, which is a 1-mile radius of the project area in March 2023. The study area includes a 1-mile radius around the project area in order to identify historic properties and cultural resources surveys within a broader area to give context for the cultural resources within the APE and to give a general overview of cultural resources and the historic context of the project vicinity.

The records review revealed one NRHP-listed property in the Northern Tract parcel, and one archaeological site that intersects with the Brownleigh parcel. An additional 29 archaeological resources and 3 architectural resources were identified within the study area. The records review showed 22 previous cultural resource surveys have been completed within the study area, 3 of which have been conducted within the APE. A total of 16 historic properties are identified within the study area that are listed or eligible for listing in the NRHP: 4 architectural resources and 12 archaeological resources.

As part of the process to identify historic properties, FAA initiated consultation with Native American tribes in May 2023. FAA asked the tribes about any traditional cultural properties, sacred sites, or places that have historic, religious, or cultural significance in the vicinity and whether they would like to participate in Section 106 consultation. Three of the twelve tribes contacted provided a response (Appendix F): the Quapaw Nation, the Peoria Tribe of Oklahoma, and the Osage Nation.

3.7.1.1.1 Archaeological Resources

There is one archaeological site within the APE, Site 23SL354. Originally reported in 1979, Site 23SL354 is a precontact (prehistoric) site. Site 23SL354 may be associated with Site 23SL31, directly west of the project footprint. Site 23SL354 has not been evaluated for NRHP eligibility (Diaz-Granados 1979).

A discrepancy between the recorded location for Site 23SL354 and the mapped location in the MoDNR Geographic Information System (GIS) Archaeology Viewer was identified during the records review. The corrected location is partially coincident with the Brownleigh site and APE, and the exact location of the site is unknown.

Geotechnical borings conducted onsite at the Brownleigh Parcel in May 2023 were monitored by an archaeologist, and no cultural materials were observed.

3.7.1.1.2 Architectural Resources

An architectural survey was completed the week of March 13, 2023. MoDNR, SHPO, Architectural/Historic Inventory Forms were prepared for architectural resources within the APE that are 50 years or older. Within the Brownleigh parcel, no extant architectural resources were identified, and no inventories were prepared. The architectural resources in the Northern Tract parcel are provided in the following sections.

3.7.1.1.2.1 Curtiss-Wright Aeroplane Factory

The Curtiss-Wright Aeroplane Factory (16000586), referred to as the McDonnell Douglas complex (5250 Banshee Road), is within the Northern Tract parcel and is listed on the NRHP. It is significant under Criterion A for military and industry with a period of significance from 1940 to 1946, and Criterion C as the embodiment of a distinctive period in architecture and the representative work of a master architect. The complex was designed by Albert Kahn (1869 to 1942), who is regarded as a pioneer of American modern industrial architecture (Bürklin and Reichardt 2019; Lynch 2020; Historic Detroit n.d.). Of the five buildings in the Northern Tract parcel, three buildings and two structures are contributing resources to the historic property: the administrative building, annex, and factory portions, a parking lot and aeroplane apron.

3.7.1.1.2.2 Building 42

Building 42 is part of the airport property and is privately used as the GoJet maintenance, repair, overhaul (MRO) base and the ATS Jet Center fixed base operator. Built in 1951, Building 42 is a mid-20th-century

modern industrial building with similar architectural design elements as the Curtiss-Wright Aeroplane Factory (16000586). The building was constructed outside of the period of significance for the Curtiss-Wright Aeroplane Factory property and does not contribute to that property.

The building retains sufficient historic integrity of association, design, materials, workmanship, location, and feeling with some diminishment in integrity of setting to reflect its architectural significance as a representative example of mid-century industrial design. Therefore, Building 42 is recommended individually eligible for listing in the NRHP under Criterion C as an example of mid-20th-century aerospace architecture. The FAA's determination was submitted to SHPO for concurrence in May 2023. SHPO's response, dated June 20, 2023, did not provide comment on the eligibility of Building 42; therefore, the FAA assumes that the SHPO concurs with it being eligible for listing in the NRHP.

3.7.1.1.2.3 Building 48

Building 48, which consists of three structures and is presently vacant, is located on the northwestern corner of the Northern Tract parcel and is part of the airport property. Built by the McDonnell Corporation in 1958 with an addition built in the 1990s, the building lacks discernable architectural style and was principally used for airplane painting and paint storage. The building was built outside of the period of significance for the NRHP-listed property and does not contribute to the Curtiss-Wright Aeroplane Factory (16000586). Therefore, Building 48 is recommended not eligible for listing in the NRHP under any criteria. The FAA's determination was submitted to SHPO for concurrence in May 2023. SHPO's response, dated June 20, 2023, did not provide comment on the eligibility of Building 48; therefore, the FAA assumes that the SHPO concurs with it not being eligible for listing in the NRHP. The Agency's responsibilities for this property under Section 106 are fulfilled and it will not be considered further (36 CFR 800.4(d)(1)(i)).

3.7.2 Thresholds of Significance

FAA Order 1050.1F, Exhibit 4-1, indicates that FAA has not established a significance threshold for historical, architectural, and cultural resources. A factor to consider is whether the action would result in a finding of adverse effect under Section 106; however, an adverse effect finding is not automatically a significant impact triggering preparation of an Environmental Impact Statement.

Effects on cultural resources are evaluated by assessing the impacts that the Proposed Action would have on the characteristics that make the property eligible for listing in the NRHP and on the property's integrity. Types of potential adverse effects include physical impacts such as the destruction of all or part of a resource; actions that adversely affect the historic setting of a resource, even if built resources are not physically affected; noise impacts evaluated according to accepted professional standards; changes to significant viewsheds; and cumulative effects or those that may occur later in time. If the project will have an adverse effect on historic properties, measures could be taken to avoid, minimize, or mitigate that effect. If adverse effects are unavoidable, mitigation may be needed to address the adverse effects to historic properties.

3.7.3 Environmental Consequences

3.7.3.1 No Action

No demolition, new construction, or development activities would take place under the No Action Alternative. Therefore, no impacts on historic, architectural, archaeological, and cultural resources would be anticipated.

3.7.3.2 Proposed Action

The Proposed Action would demolish all extant buildings within the Northern Tract parcel, including the NRHP-listed Curtiss-Wright Aeroplane Factory and associated buildings and structures, as well as NRHP-

eligible Building 42. In addition, archaeological Site 23SL354 is recorded within the Brownleigh parcel APE and may be affected by ground-disturbing activities. Because the exact location of archaeological Site 23SL354 is ambiguous, it is not clear if the Proposed Action would affect this archaeological site.

Based on the proposed demolition of the Curtiss-Wright Aeroplane Factory and Building 42, the Proposed Action would have an adverse effect on historic properties within the APE. In accordance with Section 106 of the NHPA, consultation with the Missouri SHPO is required to discuss the recommended eligibility determinations for historic properties and recommended effect finding. The lead Federal Agency, FAA, initiated Section 106 consultation with SHPO and area tribes in May 2023. SHPO concurred with the adverse effect on historic properties finding in June 2023. With SHPO concurrence of adverse effects, Section 106 requires that the FAA notify the ACHP and invite them to participate in consultation to resolve adverse effects. In their response, dated July 26, 2023, the ACHP declined the invitation to consult. The ACHP requested the FAA to file the final Section 106 agreement document (Agreement), developed in consultation with the Missouri SHPO and any other consulting parties, and related documentation with the ACHP at the conclusion of the consultation process. The filing of the Agreement and supporting documentation with the ACHP is required in order to complete the requirements of Section 106 of the NHPA. Because of the anticipated adverse effect from the project, consultation under Section 106 will continue with the SHPO to resolve the adverse effect pursuant to 36 CFR 800.6, and an agreement document was prepared under 40 CFR 800.14(b) to codify the measure to address the adverse effect.

3.7.4 Proposed Mitigation

The FAA, St. Louis Airport Authority (STLAA), Boeing, SHPO, the Quapaw Nation, the Peoria Tribe of Oklahoma, and the Osage Nation engaged in the Section 106 consultation process for this project. Because there is an adverse effect on historic properties, the adverse effect was resolved through execution of a Memorandum of Agreement (MOA; Appendix F).

There are mitigation measures in the MOA to address the adverse effect on the Curtiss-Wright Aeroplane Factory and Building 42. These include Level II Historic American Buildings Survey (HABS)/Historic American Engineering Record documentation, along with digital photography of the interiors and exteriors and drone video of the buildings, development of a website discussing the history of the buildings, and a physical display to be located at STLAA.

The MOA includes a requirement for archaeological monitoring during ground disturbance at both the Brownleigh and Northern Tract locations. The inadvertent discovery clauses from the MOA will be included in construction contracts with information about stopping work in the event human remains or cultural objects are encountered during construction on either parcel.

Although the Proposed Action will result in an adverse effect, mitigation measures in the MOA are intended to resolve adverse effects. Through implementation of these measures, impacts will be mitigated below the level of significance, and, therefore, the Proposed Action would not result in a significant impact to this category of resources under NEPA.

3.8 Department of Transportation Act, Section 4(f)

Section 4(f) of the *U.S. Department of Transportation Act of 1966* protects significant publicly owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. Section 4(f) of the *Department of Transportation Act of 1966* is currently codified as 49 U.S.C. Section 303. This EA will refer to 49 U.S.C. Section 303 as Section 4(f). Section 4(f) provides that the Secretary of Transportation may approve a transportation program or project requiring the use of publicly owned land off a public park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance, or land of a historic site of national, state, or local significance, only if there is no feasible and prudent alternative to the using that land and the program or project includes all possible planning to minimize harm resulting from the use. Appendix D includes the full Section 4(f) statement.

Parks may also be protected under Section 6(f) of the Land and Water Conservation Fund (LWCF) Act (16 U.S.C., Section 4601 et. Seq.); 36 CFR Part 59. Section 6(f) provides funds for buying or developing public use recreational lands through grants to local and state governments. Section 6(f)(3) prevents conversion of lands purchased or developed with LWCF funds to nonrecreation uses, unless the Secretary of the Department of the Interior, through the National Park Service, approves the conversion.

3.8.1 Affected Environment

There are no publicly owned parks, recreational areas, or wildlife and waterfowl refuges on the Northern Tract or Brownleigh parcels. Additionally, there are no LWCF Section 6(f) resources on these parcels. Both parcels have historic resources.

FAA has determined and the State of Missouri SHPO has concurred that the Northern Tract includes buildings that are listed or eligible for listing on the NRHP and, therefore, would be considered Section 4(f) resources. These buildings are as follows: the NRHP-listed, Curtiss-Wright Aeroplane Factory, also referred to as the McDonnell Douglas complex, and its contributing resources that include Buildings 1, 2, and 3 (administrative building, manufacturing/factory annex, and engineering annex), a parking lot, and an aeroplane apron; and the NRHP-eligible Building 42, which is currently in use as the GoJet MRO base and the ATS Jet Center fixed base operator.

The Brownleigh parcel includes archaeological Site 23SL354. This site was discovered in 1979 and has not been evaluated for NRHP eligibility. The location of the site is ambiguous and may have previously been mapped incorrectly. Section 4(f) applies to archaeological sites that are on or eligible for the NRHP and that warrant preservation in place, including those sites discovered during construction. If the site were determined to be eligible in a future evaluation and preservation in place was deemed warranted, a Section 4(f) approval would be required at that time.

Please refer to Section 3.7 of this EA for a detailed description of the NRHP-eligible and NRHP-listed resources.

3.8.2 Thresholds of Significance

As stated in Exhibit 4-1 of FAA Order 1050.1F and Paragraph 5.3.7 of the FAA Order 1050.1F Desk Reference (FAA 2020), a significant impact would occur when the action involves more than a minimal physical use of a Section 4(f) resource or a "constructive use" based on an FAA determination that the aviation project would substantially impair the Section 4(f) resource. Substantial impairment occurs when the activities, features, or attributes of the resource that contribute to its significance or enjoyment are substantially diminished. A significant impact under NEPA would not occur if mitigation measures eliminate or reduce the effects of a use less than the threshold of significance.

3.8.3 Environmental Consequences

3.8.3.1 No Action

No new construction or development activities are proposed under the No Action Alternative. Therefore, no physical or constructive use of any Section 4(f) resources would occur, and no impacts to Section 6(f) resources would be anticipated.

3.8.3.2 Proposed Action

3.8.3.2.1 Physical Use

The Proposed Action would not include the conversion of lands purchased or developed using LWCF Act funds to nonrecreational uses.

The Proposed Action would result in a physical use of a Section 4(f) resource with the total demolition of the NRHP-listed, Curtiss-Wright Aeroplane Factory, contributing buildings, and associated facilities and NRHP-eligible Building 42. All of the existing structures on the Northern Tract would be demolished to allow Boeing to construct their Assembly and Testing Campus. The demolition of these sites would constitute an adverse effect to eligible or listed historic properties under Section 106 and a physical use of Section 4(f) resources. Before approving an action, Section 4(f) requires a finding that there is no feasible or prudent alternative that would avoid the use of the Section 4(f) properties and that the project includes all possible planning to minimize harm resulting from the use. As defined in 23 CFR 774.17, "all possible planning" means that all reasonable measures to minimize harm or mitigate adverse impacts must be included in the project[1]. With regard to historic sites, this means the measures as agreed by the FAA and SHPO in accordance with the consultation process under the regulations implementing Section 106 of the NHPA. Because the Proposed Action would involve a use, a separate Section 4(f) evaluation has been prepared. The Section 4(f) statement was made available for public review. No comments were received regarding the Section 4(f) statement. The final Section 4(f) Statement is included in Appendix D of this EA.

There are no alternatives that address the purpose and need of the project and are both prudent and feasible. The FAA has consulted with STLAA and the SHPO, under Section 106, to develop an MOA. The MOA outlines the mitigation measures needed to resolve adverse effects of the Proposed Action on the National Register-listed/eligible historic properties. The mitigation measures are a requirement of the Proposed Action and would address the Section 4(f) requirement that the project include all possible planning to minimize harm when there is a use of a Section 4(f) resource. The U.S. Department of Interior concurred with the FAA's determination and recommended that HABS documentation be completed as part of the mitigation included in the MOA; a copy of the correspondence is included in Appendix F.

The MOA outlines the mitigation measures needed to resolve the adverse effects under Section 106 of the Proposed Action. Execution of the MOA and implementation of its terms also would fulfill the Section 4(f) requirement that the project include all possible planning to minimize harm and reduce the effects of the use of the Section 4(f) resource below the threshold of significance. Execution of the MOA and implementation of its terms is a requirement of the Proposed Action. Therefore, the Proposed Action will not result in a significant impact under NEPA.

3.8.3.2.2 Constructive Use

The FAA relies on land use compatibility guidelines in 14 CFR Part 150 ("Part 150") to determine whether there is constructive use under Section 4(f) where the land uses specified in Part 150 are relevant to the value, significance, and enjoyment of the 4(f) resources in question. These guidelines are used to determine noise impacts by relating land use type to certain airport noise levels. The Proposed Action would not result in new incompatible land uses due to noise associated with Boeing aircraft testing and assembly activities, as described in Section 3.11 Noise and Noise-compatible Land Use.

A review of the impacts for other resource areas including air quality, water resources, light emissions and visual impacts, and socioeconomic impacts, was conducted to determine if there would be a substantial impairment to Section 4(f) resources as a result of these resource areas. As discussed in each of the applicable sections in this EA, the Proposed Action would not result in significant impacts to any of these resource areas. Therefore, a constructive use of Section 4(f) resources would not occur.

3.8.4 Proposed Mitigation

The FAA, SHPO, STLAA, Boeing, and the Osage Nation developed an MOA that outlines mitigation measures to resolve the adverse effects as a result of the demolition of the properties (Appendix F). This agreement was finalized and agreed upon by all parties. Mitigation measures are included in Section 3.7.

[1] These regulations, issued by the Federal Highway Administration, Federal Transit Administration, and Federal Railroad Administration are not binding on the FAA but may be used as guidance to the extent relevant.

3.9 Hazardous Materials, Solid Waste, and Pollution Prevention

This section describes potential hazardous materials used or stored at the considered locations, waste streams that would be generated by the project, and methods used to avoid, prevent, or reduce pollutant discharges or emissions.

Hazardous material is defined in 49 CFR 171.8 as a "substance or material that the Secretary of Transportation has determined is capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and has been designated as hazardous under U.S.C. Title 49 Section 5103." For purposes of this EA, hazardous material refers to any item or agent (biological, chemical, or physical) that has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors.

Solid waste is defined by the implementing regulations of the *Resource Conservation and Recovery Act* (RCRA) generally as any discarded material that meets specific regulatory requirements and can include such items as refuse and scrap metal, spent materials, chemical byproducts, and sludge from industrial and municipal wastewater and water treatment plants (40 CFR 261.2).

The *Pollution Prevention Act* (42 U.S.C. 13101-13109) requires pollution prevention and source reduction control so wastes have less effect on the environment while in use and after disposal. The *Pollution Prevention Act* describes methods used to avoid, prevent, or reduce pollutant discharges or emissions.

The Boeing St. Louis region has an environmental health and safety department and is International Standards Organization (ISO) 14001 certified. ISO 14001 is an internationally agreed standard that sets out the requirements for an environmental management system, with compliance obligations being a mandatory requirement of the standard. ISO14001 stipulates that an environmental management system must contain five main requirements: Environmental Policy, Planning, Implementation, Checking and Corrective Action, and Management Review.

3.9.1 Affected Environment

3.9.1.1 Hazardous Materials

3.9.1.1.1 Northern Tract Parcel

Prior investigations concluded that soil and groundwater on the Northern Tract parcel are contaminated with VOCs, polyacrylic aromatic hydrocarbons, polychlorinated biphenyls (PCBs), metals, and total petroleum hydrocarbons (TPHs) (Stantec 2023a).

The Northern Tract parcel is part of the RCRA Site "Tract 1," which encompasses approximately 210 acres bounded by McDonnell Boulevard, Lindberg Boulevard, and the airport. Boeing maintains a Missouri Hazardous Waste Management Facility Part I Permit Number MOD000818963 (MoDNR 2017) for post-closure care of releases to the environment that occurred on the property. The permit requires continued groundwater monitoring of the site and additional requirements for any construction, such as area-specific health and safety plans (HASPs).

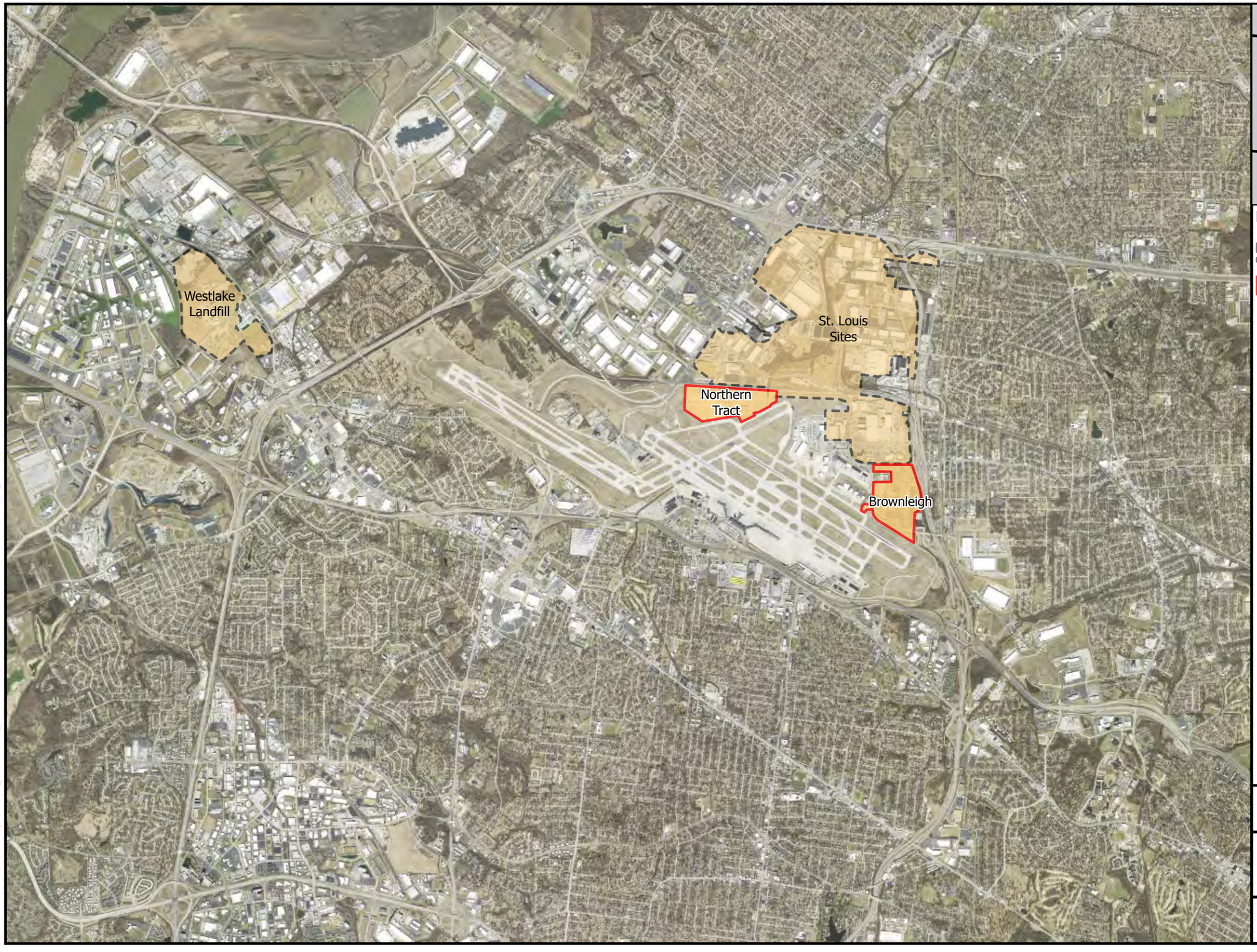
Boeing entered into an Environmental Covenant agreement between the City of St. Louis and MoDNR for the Northern Tract parcel in 2020, which is used to mitigate potentially unacceptable future exposures to residual contamination at the site. The Environmental Covenant includes a Soil Management Plan that limits contact with groundwater and soils during soil disturbance activities and requires area-specific HASPs before subsurface excavations. There are also area-specific construction restrictions for any enclosed building intended for habitation (MoDNR, Boeing, and City of St. Louis 2020). There are 13 active groundwater monitoring wells and 26 plugged monitoring wells on the Northern Tract parcel.

A Phase II ESA was conducted at the Northern Tract from June to July 2023. Soil, groundwater, and soil vapor samples were collected across the site and analyzed for various VOCs, SVOCs, TPH, and metals.

Samples were compared against Missouri Non-Residential Use Screening Levels. Arsenic was detected in several soil samples, with one sample located in the north-central portion of the site, greater than the screening level. Groundwater samples from two monitoring wells in the eastern portion of the site contained SVOCs at concentrations higher than the screening levels, with one of the wells also having lead greater than the screening level. Lastly, soil vapor detections did not exceed Missouri Non-Residential Use Screening Levels.

Buildings 1 and 2 (Figure 2-1) are known to the have asbestos and suspected to have lead-based paint. These buildings have not been occupied in approximately 20 years.

Two Superfund sites are located near the St. Louis Lambert International Airport (Figure 3-3): St. Louis Airport, Hazelwood Interim Storage, and Futura Coatings Company (St. Louis Sites) and Westlake Landfill. The St. Louis Sites consists of two locations and multiple properties, including the St. Louis Airport Site (SLAPS). SLAPS is located immediately north of the Northern Tract parcel and approximately 1.4 miles northwest of the Brownleigh parcel. Remediation at SLAPS was completed in 2007 (USACE 2020). The 200-acre Westlake Landfill in Bridgeton, which is in the Remedial Design and Remedial Investigation phases, is located approximately 5 miles northwest of the Northern Tract parcel and approximately 7 miles northwest of the Brownleigh parcel.



LEGEND:

- Superfund Site Boundary
- Detailed Study Area

N

BASE MAP SOURCE:
USGS USA Topo Map

0 1,500 3,000 4,500 6,000 7,500
FEET

St. Louis Expansion,
St. Louis County, Missouri

FIGURE 3-3
SUPERFUND SITE BOUNDARY

DATE: 8/17/2023

Jacobs

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3.9.1.1.2 Brownleigh Parcel

A Phase II ESA was conducted in May 2023. The Phase II included the collection of soil vapor samples for VOC analysis and soil and groundwater samples for VOCs, semivolatile organic compounds (SVOCs), TPHs, and metals analysis, asbestos and PCBs in shallow and mid-depth soil samples only, and per- and polyfluoroalkyl substances (PFAS) in select groundwater samples. Initial laboratory results indicate the presence of VOCs, SVOCs, TPH, and metals in multiple groundwater and soil samples, PFAS in one groundwater sample, PCBs in one soil sample, and VOCs in multiple soil vapor samples but not at concentrations that exceed their Missouri non-residential screening levels. Asbestos was detected in two soil samples.

3.9.1.2 Solid Waste

Champ Landfill in Maryland Heights, Missouri, is the only solid waste landfill permitted in St. Louis County (Champ Landfill n.d.) and serves the disposal needs of the western St. Louis County and St. Charles County. Champ Landfill accepts household waste, nonhazardous commercial waste, agricultural waste, and construction debris. The Champ Landfill permitted footprint is 254 acres on the 523-acre site with a 129-million-cubic-yard capacity. The landfill has capacity to serve customers for decades (Champ Landfill n.d.).

Rock Hill Quarries Company Demolition Landfill in St. Louis, Missouri, is the only permitted demolition landfill in St. Louis County accepting waste debris from construction and demolition activities.

3.9.1.3 Pollution Prevention

The Northern Tract and the Brownleigh parcels are located within the Industrial Stormwater Pollution Prevention Plan (SWPPP) boundary of the airport's National Pollutant Discharge Elimination System (NPDES) Site-specific Missouri State Operating Permit MO-0111210. The SWPPP requires routine monitoring and reporting of stormwater discharges (MoDNR Missouri Clean Water Commission 2022).

3.9.2 Thresholds of Significance

FAA Order 1050.1F, Exhibit 4-1, indicates that FAA has not established a significance threshold for this resource. However, FAA Order 1050.1F does identify the following factors that may be applicable to this category and, depending on intensity, could indicate a significant impact:

- Violate applicable federal, state, tribal, or local laws or regulations regarding hazardous materials and/or solid waste management.
- Involve a contaminated site.
- Produce an appreciably different quantity or type of hazardous waste.
- Generate an appreciably different quantity or type of solid waste or use a different method of collection or disposal and/or would exceed local capacity.
- Adversely affect human health and the environment.

3.9.3 Environmental Consequences

3.9.3.1 No Action

Under the No Action Alternative, the project sites would remain in their current condition; therefore, no change to the use, generation, or disturbance of hazardous materials, solid waste, or pollution prevention would be expected.

3.9.3.2 Proposed Action

3.9.3.2.1 Hazardous Materials

The Proposed Action would result in short-term negligible adverse impacts related to hazardous materials and petroleum products from construction activities. Construction would require the use of hazardous materials such as gasoline, oils, coolant, and lubricants commonly used by construction equipment, paints, welding gases, solvents, preservatives, and sealants. Equipment servicing and repair activities could temporarily generate oily and hazardous wastes, such as spent solvents, residual fuels, used oils, used batteries, antifreeze, and filters. Construction activities would be conducted consistent with hazardous waste and pollution use and storage regulations, with guidelines specified in an SWPPP.

There is potential for construction to disturb existing soil and groundwater contamination on the Northern Tract parcel. The basement of the Curtiss-Wright building would be removed and filled. Although none of the buildings on the Northern Tract would be designed to have basements, site preparation would require cut and fill to construct the buildings higher than the base flood elevation and account for building foundations. Any contaminated soil not reused onsite under the terms of the Environmental Covenant agreement would be hauled away by a licensed and trained disposal service, such as Clean Harbors or Heritage Environmental Services. Additionally, the Environmental Covenant agreement requires there to be ground cover on the Northern Tract, which could include cover such as landscaping, asphalt, or concrete. There is also potential for the Proposed Action to disturb hazardous materials that could be present on the Brownleigh parcel.

The Brownleigh parcel is not located within the SLAPS or SLAPS Vicinity Properties (VP) site boundaries, and therefore the development of the Brownleigh parcel does not present any radiological issues. The easternmost portion of the Northern Tract parcel is located partially within the SLAPS VP site boundary; however, the United States Army Corps of Engineers previously investigated this area and found it to be uncontaminated by Formerly Utilized Sites Remedial Action Program (FUSRAP) materials with no need for further action or activity restrictions. Therefore, development of the Northern Tract parcel will not present any radiological issues.

BMPs documented in an SWPPP and/or a project-specific site construction safety plan would be followed to avoid significant risks or health hazards associated with hazardous materials and hazardous wastes. A variety of environmental inspections would be performed by staff or contractors, such as stormwater pollution prevention, hazardous waste management, spill prevention and counter measures and control, and air pollution audits. With adherence to all requirements in the Missouri Hazardous Waste Management Facility Part I Permit Number MOD000818963 (MoDNR 2017) and the Environmental Covenant agreement (MoDNR, Boeing, and City of St. Louis 2020) and implementation of BMPs and inspections, construction, and demolition activities would not be expected to release contamination to neighboring properties or to the environment.

A hazardous materials survey would be conducted before demolition to identify the exact types and quantities of hazardous building materials in the buildings on the Northern Tract. Regulated structures would be inspected by a Missouri-certified asbestos inspector. The construction contract would require the contractor to handle disposal of all hazardous materials in accordance with applicable federal, state, and local regulations and requirements. In accordance with St. Louis County Air Pollution Control Code Section 612.513 and 40 CFR Subpart M 61.145, a registered asbestos abatement contractor would remove any asbestos-containing material and properly dispose of it in either a state-permitted sanitary landfill (friable and Category II nonfriable asbestos) or a state-permitted demolition landfill (Category I nonfriable asbestos). Lead-safe work practices would be implemented to minimize lead-based paint dust and debris generated during demolition activities. These practices include containing dust inside the work area, using dust-minimizing work methods (for example, wetting surfaces to control the spread of leaded dust into the air), and conducting careful cleanup during the demolition. With adherence to applicable regulations and requirements and implementation of BMPs, no significant adverse impacts from demolition of hazardous building materials would be expected.

The Phase 2 paint facility would be located within an area of the Northern Tract parcel that requires an area-specific HASP for construction and an evaluation for vapor intrusion from volatile chemicals of concern. A vapor intrusion mitigation system would be built to prevent intrusion of chemical vapors from existing contaminated groundwater and soil into the Phase 2 paint facility in the Northern Tract parcel. During construction at the Northern Tract parcel, all requirements in the Missouri Hazardous Waste Management Facility Part I Permit Number MOD000818963 (MoDNR 2017) and the Environmental Covenant agreement (MoDNR, Boeing, and City of St. Louis 2020) would be adhered to, and, if necessary, mitigation measures would be taken to ensure the health and safety of construction workers and Boeing facility workers.

If existing active or plugged monitoring wells are determined to be within the construction footprint on either parcel, these wells would be relocated or abandoned in coordination with MoDNR. If any previously unknown contaminants are discovered during construction, MoDNR will be informed and work will proceed following requirements established in the Environmental Covenant (MoDNR, Boeing, and City of St. Louis 2020) and Agency-approved Soil Management Plan.

Operations at the new facilities would require the use of hazardous materials and generation of hazardous waste. The Brownleigh parcel would have a new RCRA Large Quantity Generator (LQG) status. LQGs generate 1,000 kilograms per month or more of hazardous waste or more than 1 kilogram per month of acutely hazardous waste and are required to obtain an EPA Identification (ID) number. All Boeing employees that handle hazardous materials would receive training on hazardous waste management and spill response. The Northern Tract parcel would either be a new LQG or may be incorporated into the current LQG EPA ID number in conjunction with facilities adjacent to the Northern Tract parcel. Hazardous wastewater generated in the aircraft assembly booths would be stored in a 5,000-gallon tank with aboveground containment and removed by a tank-truck, pick-up service (Clean Harbors or Heritage Environmental Services) on a regular schedule. Washdown of aircraft would require collection of the water so that it can be properly processed to remove any hazardous chemicals or elements before entering the sanitary sewer system. Garage or maintenance trench drains and associated waste and vent piping would be routed out of the building to an oil/water separator before connection to the sanitary sewer system. Hazardous materials, such as cleaners, lubricants, propellants, and stencil ink, would be stored in the appropriate storage cabinets within designated areas. Spill containment piping would be provided for areas where chemical, solvents, or paints are stored or mixed. In the event of a fire, sprinkler water and firefighting foam would be collected in trenches that are routed to a sump and into an exterior below-grade containment tank.

Boeing would comply with federal, state, and local laws that control the use, generation, disposal, and monitoring of hazardous materials and would obtain and comply with applicable permits. Therefore, no significant impacts to hazardous materials from operation of the Proposed Action would be expected.

3.9.3.2.2 Solid Waste

Under the Proposed Action, there would be an increase in construction and demolition debris. Solid waste generated from the proposed construction and demolition activities would consist of typical building materials, such as solid pieces of concrete, metal, glass, and lumber. Contractors would be required to recycle construction and demolition debris to the extent practicable, thereby diverting if from landfills. Materials with possible recycling potential include glass, plastics, asphalt, concrete, metal, carpeting, and gypsum wallboard and lumber. Solid waste generated during construction, demolition, and operation of the Proposed Action would be disposed of at local, permitted landfills and would not exceed landfill capacity in St. Louis County. Therefore, impacts to solid waste would be less than significant.

3.9.3.2.3 Pollution Prevention

A Construction SWPPP and a Land Disturbance Permit from MoDNR would be required for construction of the Proposed Action. BMPs would be implemented to avoid or minimize accidental spills or releases and so that any spills or releases do not result in contamination. With adherence to all requirements in the Missouri Hazardous Waste Management Facility Part I Permit Number MOD000818963 (MoDNR 2017),

the Environmental Covenant agreement (MoDNR, Boeing, and City of St. Louis 2020), and implementation of BMPs and inspections, construction and demolition activities would not be expected to release contamination to neighboring properties or to the environment.

3.9.4 Proposed Mitigation

- Adhere to all federal, state, and local laws and regulations that control the use, generation, disposal, and monitoring of hazardous materials and comply with applicable permits.
- Adhere to all requirements in the Missouri Hazardous Waste Management Facility Part I Permit Number MOD000818963 (MoDNR 2017) and the Environmental Covenant agreement (MoDNR, Boeing, and City of St. Louis 2020).
- A vapor intrusion mitigation system would be built to prevent intrusion of chemical vapors from existing contaminated groundwater and soil into the Phase 2 paint facility in the Northern Tract parcel.
- Implementation of SWPPP, construction site safety plans, and BMPs would minimizes potential impacts associated with construction and operation associated with the Proposed Action.

3.10 Natural Resources and Energy Supply

This section describes the consumption of natural resources (such as water, asphalt, aggregate, wood) and the use of energy supplies (such as coal for electricity, natural gas for heating, and fuel for aircraft or other ground vehicles) that would result from construction and operation of the Proposed Action or alternatives.

3.10.1 Affected Environment

Electrical service is provided to the airport by Ameren Missouri, which is the state's largest electric utility and has a generating capacity of approximately 10,000 megawatts (Ameren Missouri 2023). Spire, Inc. supplies natural gas. Spire Inc.'s St. Louis Pipeline provides an abundant and reliable supply of natural gas to the St. Louis area (Spire Inc. n.d.).

Missouri American Water supplies potable water. In St. Louis County, approximately 80% of the water supply comes from the Missouri River and approximately 20% comes from the Meramec River. Both rivers have a plentiful supply of water (Missouri American Water 2022). Wastewater is collected and routed to treatment plants operated by Metropolitan St. Louis Sewer District, the fourth largest sewer system in the U.S. Metropolitan St. Louis Sewer District operates seven wastewater treatment facilities that process an average of 350 million gallons of sewage every day (Metropolitan St. Louis Sewer District n.d.).

The airport has a newly constructed (2019) bulk fuel storage facility, which receives liquid petroleum products from the St. Louis Pipeline (St. Louis Pipeline Operating Co., LLC) (Spire Inc. n.d.). The bulk fuel storage facility is located within the northwestern portion of the Brownleigh parcel.

No scarce or unusual materials would be used for construction of the new facilities.

3.10.2 Thresholds of Significance

FAA Order 1050.1F, Exhibit 4-1, shows that FAA has not established a significance threshold for this impact category. However, a factor to consider is whether the action would have the potential to cause demand to exceed available or future supplies of these resources.

3.10.3 Environmental Consequences

3.10.3.1 No Action Alternative

No new construction or development activities are proposed under the No Action Alternative. Therefore, there would be no increase in demand for natural resources and energy from this alternative. Electricity,

petroleum, natural gas, water, and wastewater services would continue to be used at existing facilities at the airport.

3.10.3.2 Proposed Action

Under the Proposed Action, there would be a short-term increase in demand of natural resources (construction materials and water) and energy supplies (vehicle or equipment fuel and electricity) during the construction phase. There would be a long-term increase in demand of energy supplies (electricity, natural gas, gasoline, and jet fuel) associated with operation of the new facilities and aircraft test flights. The new facilities would also require new water and wastewater utility lines. Project engineers have coordinated with utility providers regarding supply infrastructure, and energy supply, water supply, and wastewater treatment capacity are sufficient to accommodate the increased demand resulting from the new facilities. Sustainable design would be incorporated to the maximum extent feasible with a target of achieving U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) New Construction Silver Certification.

The Proposed Action would not cause demand to exceed available or future supplies of natural resources and energy; therefore, impacts would be less than significant.

3.11 Noise and Noise-compatible Land Use

An assessment must be made to determine the aircraft noise impact of a proposed airport action. This assessment compares the present noise impact on the environment with that of the proposed change for the year of anticipated project implementation and 5 to 10 years after implementation in accordance with FAA Order 1050.1F guidance. For aviation noise analyses, FAA has determined that the cumulative noise energy exposure of individuals to noise resulting from aviation activities must be established in terms of day night average sound level (DNL), FAA's primary noise metric. FAA uses the 14 CFR 150, Airport Noise Compatibility Planning, land use compatibility guidelines to determine compatibility with most land uses. The DNL 65 decibels (dB) is the noise level where noise-sensitive land uses (such as residences, churches, schools, libraries, and nursing homes) become noncompatible land uses. All land uses are generally determined to be compatible with airport noise less than DNL 65 dB.

3.11.1 Affected Environment

The airport is an active commercial airport. It is the primary commercial airport serving the Greater Metropolitan St. Louis Region and the busiest airport in the State of Missouri. The airport has four runways.

The Airport Noise Compatibility Program addresses ways to potentially reduce current and future noise levels on communities surrounding the airport. The program has three focus areas: noise abatement, land use planning, and program management. Noise abatement measures include approved departure routes of aircraft and time restrictions on various aircraft operations and movements. Land use planning includes the airport's efforts to work with local jurisdictions to ensure optimal development can occur that is compatible with airport and aircraft operations. Program management measures include the airport's Noise and Operations Monitoring System and outreach programs with area communities.

The latest Part 150 Noise Compatibility Study Update was prepared in 2010 and documented existing and projected noise levels around the airport. As of 2010, all eligible land uses in the DNL 65+ dB have been mitigated or were offered and declined mitigation from the existing noise mitigation programs.

According to the Executive Summary of 2010 Part 150 Noise Compatibility Study, there were 107 housing units in the DNL 65 to 70 dB noise exposure contour, as well as 3 churches. There were no schools, libraries, hospitals, or nursing homes. Of the 107 housing units, 17 participated in the Sound Insulation Program, 3 participated in Limited Avigation Easement Program.

3.11.2 Thresholds of Significance

According to FAA Order 1050.1F, Exhibit 4-1, a significant noise impact would occur if the analysis shows that the Proposed Action would result in noise-sensitive areas experiencing an increase in noise of DNL 1.5 dB or more at or greater than DNL 65 dB noise exposure level, or that will be exposed at or greater than the DNL 65 dB level due to a DNL 1.5 dB or greater increase when compared with the No Action Alternative for the same timeframe.

The Area Equivalent Method (AEM) is a screening procedure used to simplify the assessment step in determining the need for more detailed noise modeling using AEDT. AEM is a mathematical procedure that provides an estimated noise contour area of a specific airport given the types of aircraft and the number of operations for each aircraft. The noise contour area is a measure of the size of the landmass enclosed within a level of noise as produced by a given set of aircraft operations. AEM produces noise contour areas (in square miles) for the DNL 65 dB noise level, and the purpose of AEM is to screen for significant impact within the DNL 65 dB contour area. AEM is used to develop insight into the potential increase or decrease of noise resulting from a change in aircraft operations.

A 17% increase indicates that the Proposed Action could result in a DNL 1.5 dB or greater increase at a noise-sensitive area and that further analysis is required. Conversely, if the screening process shows less than a 17% increase, it may be concluded that there are no significant impacts on a noise-sensitive area. If the percentage difference from the change is less than 17%, no further study is necessary.

3.11.3 Environmental Consequences

3.11.3.1 No Action

No new construction or development activities are proposed under the No Action Alternative, and the No Action Alternative would not involve any major changes to the existing conditions and aircraft traffic. No proposed changes would be implemented. Noise would remain at existing levels, and no impacts on noise-sensitive receptors would be anticipated.

3.11.3.2 Proposed Action

3.11.3.2.1 Aircraft Traffic

One AEM model was prepared for the year of the project implementation, and one model was prepared for 5 years after implementation, assuming all other aircraft traffic was equal. Airport-wide aircraft traffic information was derived from the 2022 L3Harris Noise and Operations Monitoring System data provided by the airport. Annual traffic was sorted by equipment type and time of the day. Traffic information was then divided by 365 days to obtain the average daily operations per equipment type for both daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.). This information was then included in the AEM models.

For the 12 months preceding April 2023, Boeing traffic averaged 2.1 sorties a day. On average, a sortie includes one takeoff and two landings (one traffic pattern and one landing). For AEM analysis only, it was assumed this was equivalent to 4.2 landing takeoffs (LTOs). Table 3-4 summarizes the daily LTOs used for AEM modeling for the Boeing traffic. Boeing anticipates a reduction in the existing F-15 operations due to client programs ending. The new program will compensate the reduction in F-15 operations. Total yearly operations for the new program should be slightly lower than the basecase scenario. However, a slight increase was planned for AEM modeling purposes as a conservative approach. The F18 program is set to terminate by end of year 2025. The F18 operations have been removed in the project +5 year scenario. Other programs are anticipated to ramp up in the future starting in 2026, including TX and T7 programs. For AEM modeling, the T-38A has been used to model these programs.

Traffic patterns will be similar to existing programs. All flight testing will be conducted between dawn and dusk; no nighttime flight testing is anticipated.

Table 3-4. Boeing's St. Louis Lambert International Airport Landing Takeoffs

Daily LTO	F15	F18	T-38A (to model TX and T7 programs)	Total
Basecase	2.1	1.7	0.4	4.2 LTOs, 2.1 sorties
Project Implementation	2.5[a]	1.7	0.4	4.6 LTOs, 2.3 sorties
Project + 5 Years	2.5[a]	0	1.6	4.1 LTOs, 2.05 sorties

[a] Even though traffic is likely to be lower due to schedule and ending of various Boeing programs, a conservative approach was used and a slight increase in the F15 operations was planned.

Table 3-5 summarizes AEM results. The screening process for the Proposed Action shows less than a 17% increase, which indicated there are no significant impacts on a noise-sensitive area and no further study is necessary.

Table 3-5. Area Equivalent Method Results

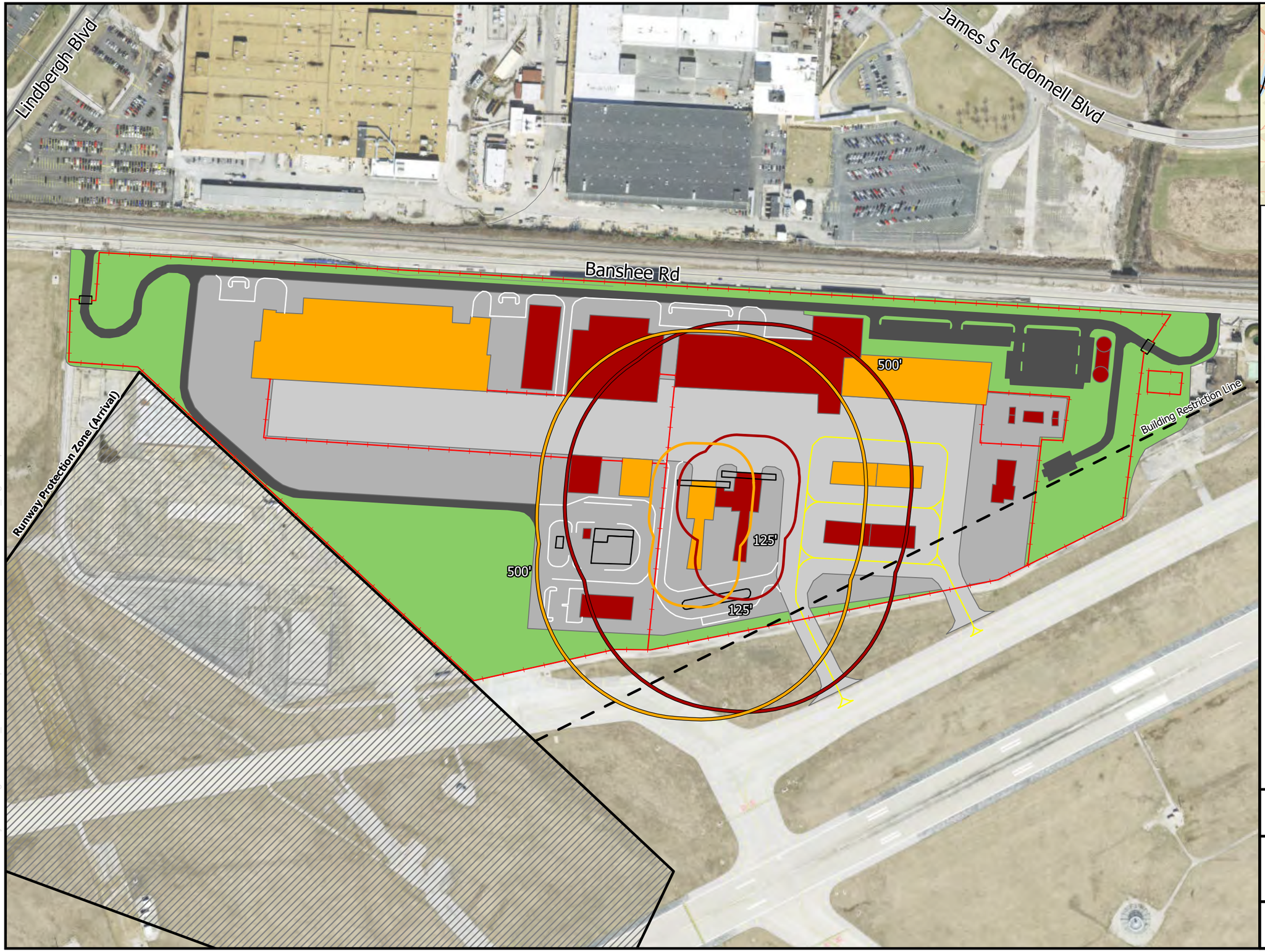
DNL (dB)	Baseline Area (square miles)	Alternative Area Project Implementation (square miles)	Percent Change in Area	Alternative Area Project +5 Years (square miles)	Percent Change in Area
65	6.5	6.8	4.4%	6.6	0.9%

3.11.3.2.2 Engine Testing and Hush Houses

Outdoors aircraft engine testing would take place at an existing "stump" on Papa Pad and is not expected to significantly increase from existing levels. A stump is an anchor or anchors in the pavement suitable to restrain an engine at full thrust. In addition, engine and aircraft equipment testing would take place in Hush Houses on the Northern Tract parcel. A hush house is an enclosed facility used to abate noise during aircraft systems testing. The Proposed Action includes two Hush Houses for aircraft testing, both on the Northern Tract parcel. The first Hush House would be built during Phase 1, and the second Hush House would be built during Phase 2.

Hush Houses are located near the existing airport taxiway, inside the campus. Several buildings are located between the Hush Houses and the airport property's limit, which should further dampen noise from testing. In addition, historical data for existing Hush Houses show that for locations tested at 125 feet, the resulting noise is typically between 76 dB and 83 dB maximum. One location was tested at 500 feet, and the noise levels were less than DNL 60 dB.

Figure 3-4 depicts the 125-foot and 500-foot radius from the conceptual locations of the proposed Hush Houses. Both the 125-foot (DNL 83 dB maximum) and 500-foot (DNL 60 dB) radius are entirely contained on airport property and the Proposed Action campus and do not include noise-sensitive receptors. Existing hush houses are approximately 5,000 feet from the closest residential properties. The closest residential properties are approximately 4,700 feet from the proposed hush houses and noise from the hush houses is not expected to be significant on residential properties. If during continued site design the location of the hush houses were to shift to any other location within the Northern Tract, the distance to the closest residential properties would still be far enough away to expect less than significant impacts.



Legend

- Building Restriction
- Fence

Detail

Type
- Line Type 1
- Line Type 2
- Gate/Impassable
- Seeded Area
- Runway Protection Zone

125' Buffer

Phase
- I
- II

500' Buffer

Phase
- I
- II

Building

Phase
- I
- II

Pavement

Type
- Aircraft
- Asphalt
- Concrete

N

BASE MAP SOURCE:
USGS USA Topo Map

0 500
FEET

Boeing STL Expansion

Figure 3-4
Noise Map

DATE: 8/16/2023

Jacobs

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3.11.3.3 Construction Noise

Temporary construction noise, including noise from demolition of existing site facilities and building new facilities, would result in minor, short-term, direct, adverse impacts. Construction noise would not result in noticeable impacts at off-airport properties because of its temporary duration and the lack of sensitive receptors in direct proximity to the Proposed Action. The closest residential properties are approximately 4,700 feet from the Northern Tract parcel and construction noise is not expected to be significant on residential properties.

3.11.3.4 Proposed Mitigation

The Proposed Action would not cause significant impacts on noise-sensitive receptors; therefore, no proposed mitigation is included.

3.12 Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks

This section includes an overview of socioeconomics, environmental justice, and children's environmental health and safety risks.

3.12.1 Affected Environment

3.12.1.1 Socioeconomics

Socioeconomics refers to the characteristics of the social and economic environment, including population, economy and employment, and local traffic and transportation.

3.12.1.1.1 Population and Economy

The project site is in St. Louis County, Missouri, which has a population of 998,227 people. The population within the county and the greater St. Louis area has seen a slight population decline in recent years.

The U.S. Department of Defense and other military operations are major contributors to Missouri's economy. In fiscal year 2018, $18.2 billion in military spending supported more than 180,000 direct and indirect jobs (7% of statewide employment) and has a $29.2 billion in total direct and indirect economic impact. Nearly two thirds of this spending is from the defense aerospace industry, with Boeing being the largest contractor (Missouri Military Advocate 2020). Boeing currently employees approximately 15,000 people in the St. Louis region, making it one the state's largest employers.

The airport is and will continue to be a major attractor of business and development in the St. Louis region. The airport currently employs more than 15,000 people and generates an estimated $5.1 billion annually to the St. Louis region. In 2008, military operations, including Boeing, accounted for 1.2% of total aircraft operations at the airport (St. Louis Lambert International Airport 2012). According to the Boeing and airport lease agreement, Boeing pays an annual rent of $227,111 to the airport (St. Louis Lambert International Airport n.d.). The Brownleigh parcel is located on vacant land owned by the airport. The Northern Tract parcel, also owned by the airport, currently has both vacant buildings and existing tenants (ATS Jet Center and GoJet Airlines).

3.12.1.1.2 Local Traffic and Transportation

There are numerous existing roadways that provide access to the airport. Access to the main terminal is provided via Lambert International Boulevard, and vehicles access existing Boeing buildings via Airport Road to James S. McDonnell Boulevard, with gate access at Genaire Drive. The primary roadways used to access general aviation land uses surrounding the airport are described in the following bulleted list and

are shown on Figure E-1. Table E-1 (Appendix E) shows the average annual daily traffic for the primary roadways within the project area.

- **James S. McDonnell Boulevard** is a north-south roadway. South of Airport Road, James S. McDonnell Boulevard is a two-lane roadway that provides access to Airport Road and is classified as a Major Collector. North of Airport Road, James S. McDonnell Boulevard is a four-lane roadway that provides access to Banshee Road and US 67 (Lindbergh Boulevard) and is classified as a Principal Arterial.
- **Airport Road** is a four-lane, east-west roadway that provides access to James S. McDonnell Boulevard and Interstate 170. Airport Road is classified as a Principal Arterial.
- **US 67 (Lindbergh Boulevard)** is a six-lane, north-south roadway that provides access to James S. McDonnell Boulevard and Interstate 270. US 67 (Lindbergh Boulevard) is classified as a Principal Arterial.
- **Banshee Road** is a two-lane, east-west roadway that provides access to James S. McDonnel Boulevard and Missouri Bottom Road. Banshee Road is classified as a Major Collector.
- **Missouri Bottom Road** is a four-lane, east-west roadway that provides access to Banshee Road, US 67 (Lindbergh Boulevard), and Interstate 270. Missouri Bottom Road is classified as a Major Collector.

The existing roadway network capacities were analyzed using guidelines set forth in the *Highway Capacity Manual, Seventh Edition* (Transportation Research Board 2022). The level of service (LOS) was calculated to determine how the existing intersections near the airport are currently operating. LOS refers to the operational conditions within a traffic stream and the perception by motorists in terms of delay, freedom to maneuver, traffic interruptions, convenience, comfort, and safety. It ranges from "A" (best) to "F" (worst). Vehicles experience very little delay under LOS A conditions and excessive delays under LOS F conditions. Most agencies and municipalities consider LOS D to be the minimum acceptable LOS. Results of the analysis indicate that the study intersections generally operate above LOS D. There are two intersections that currently operate below LOS D. One intersection is located at the northeast-bound approach at intersection of Airport Road (N) and James S. McDonnell Boulevard, which currently operates under unacceptable LOS in both peak hours with the overall intersection operating at a LOS F in the p.m. peak hour. The second intersection located at James S. McDonnell Boulevard and Boeing Gate 64 currently operates at unacceptable LOS in the p.m. peak hour with the overall intersection operating at LOS F.

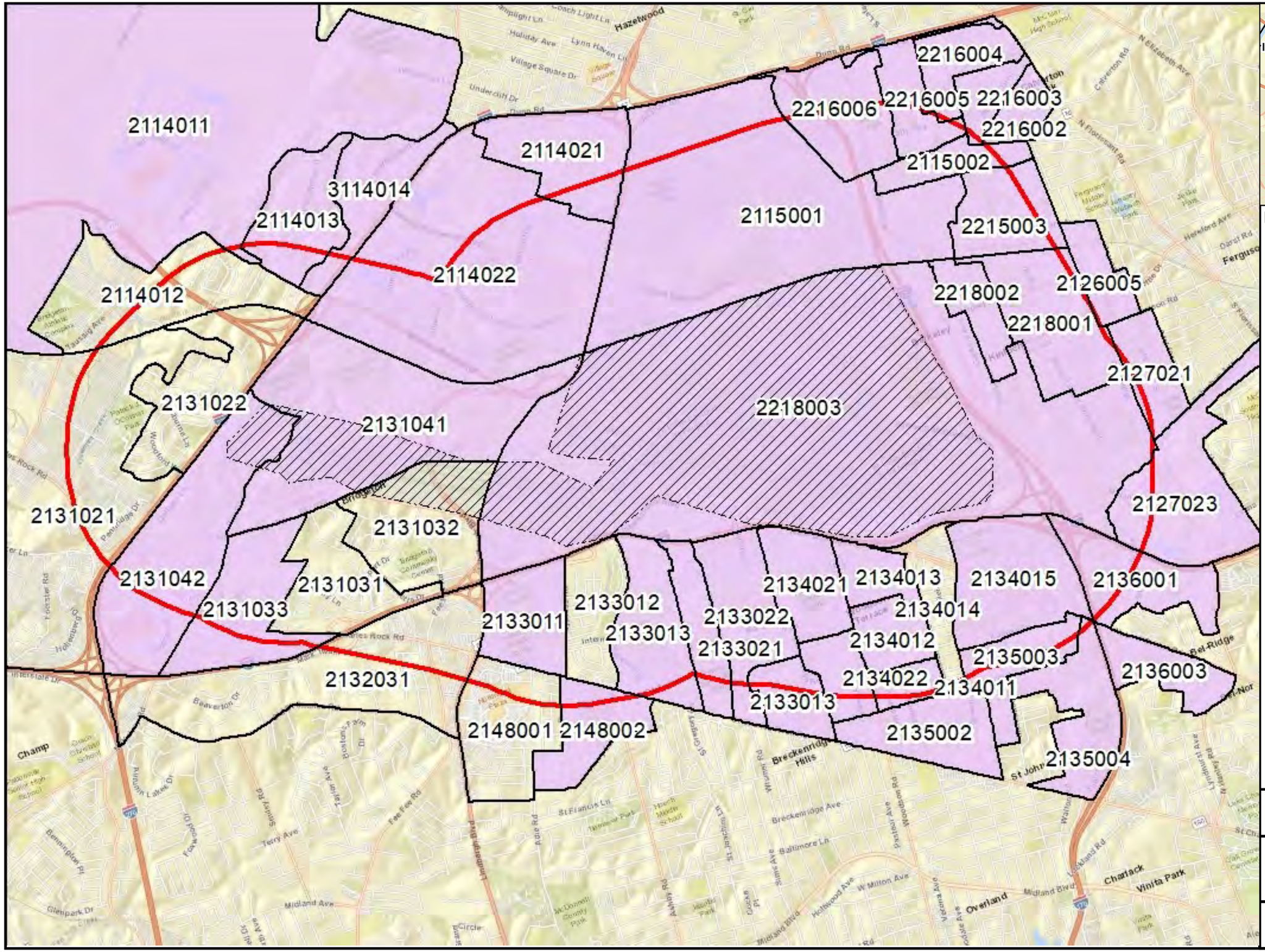
3.12.1.2 Environmental Justice

Environmental justice reviews consider the presence of minority populations, low-income populations, or Indian tribes in the area affected by the Proposed Action. For the purposes of this analysis, a 1-mile radius around the airport was used as the study area for the initial assessment. The study area demographics were compared with St. Louis County, Missouri, and the nation, as shown in Table E-2 (Appendix E).

The total population of the study area is 24,200. The total minority population of the study area is 60%, compared with 35% for St. Louis County, 21% for Missouri, and 40% for the U.S. The total low-income population of the study area is 46%, compared with 23% for St. Louis County, 31% for Missouri, and 30% for the U.S., as shown in Table 3-6. For the purposes of this analysis, it is assumed that minority or low-income populations are present if the population is "meaningfully greater" than the general population. Table 3-7 shows the census block groups within the study area with a minority or low-income population greater than St. Louis County. Based on this analysis, 39 out of the 49 census blocks within the study area are considered environmental justice populations; therefore, there are environmental justice populations within the study area. Figure 3-6 shows the land use surrounding the airport, including the presence of residential areas near the proposed project sites.

Table 3-6. Demographic Data for Study Area Compared to Surrounding Areas

Demographic	Study Area Number	Study Area Percent	St. Louis County Number	St. Louis County Percent	Missouri Number	Missouri Percent	U.S. Number	U.S. Percent
Total Population	24,200	100%	996,179	100%	6,124,160	100%	318,558,162	100%
White	9,581	40%	645,623	65%	4,850,569	80%	197,362,672	62%
Black	11,042	46%	240,821	24%	696,649	12%	39,098,319	12%
American Indian or Alaska Native	34	0%	1,405	0%	22,474	0%	2,084,326	1%
Asian	671	3%	44,312	4%	106,801	2%	16,425,317	5%
Pacific Islander Native Hawaiian	10	0%	259	0%	5,886	0%	508,924	0%
Some Other Race	51	0%	3,068	0%	8,742	0%	676,003	0%
Two or More Races	632	3%	31,295	3%	131,246	2%	7,203,494	2%
Hispanic or Latino	2,179	9%	29,396	3%	237,284	4%	55,199,107	17%
Total Minority	14,520	60%	348,663	35%	1,286,074	21%	127,423,265	40%
Total Low Income	11,132	46%	229,121	23%	1,898,490	31%	95,567,449	30%



LEGEND:

- Lambert Airport
- Census block groups with a minority or low-income population greater than thresholds
- Census Block Groups within 1-mile radius
- 1-mile buffer area

N

BASE MAP SOURCE:
USGS USA Topo Map

0 1,500 3,000 4,500 6,000 7,500
FEET

St. Louis Expansion,
St. Louis County, Missouri

Figure 3-5
Study Area Census Block Groups
Greater Than Threshold

DATE: 9/13/2023

Jacobs

Bridgeton
Hazelwood
Florissant
Earth City
Berkeley
ST. LOUIS LAMBERT
INTERNATIONAL AIRPORT
Champ
Ferguson
St. Ann
Maryland Heights
Woodson Terrace
St. John
Breckenridge Hills
370
270
67
170
70
180

LEGEND
- Airport Boundary
- 2015 Noise Contours (65 dNL)
- Airport Facilities
- Airport Property
- Single Family
- Duplex/Townhome
- Multi-Family
- Commercial
- Institution
- Industrial/Utility
- Recreation
- Park
- Vacant/Agriculture

Figure 3-6
St. Louis Lambert International
Airport Surrounding Land Use

SOURCES: Open Governmen portal for St. Louis County, MO for July 2020 (basemap/land uses), https://data-stlcogis.opendata.arcgis.com/; St. Louis Lambert International Airport Layout Plan, 2012 (noise contours).

3.12.1.3 Children's Environmental Health and Safety Risk

There are schools, childcare centers, parks, and similar areas frequented by children in the 1-mile radius study area, as shown on Figure E-3 (Appendix E). There are no community resources on the airport property that serve children.

3.12.2 Thresholds of Significance

3.12.2.1 Socioeconomics

Socioeconomic impacts are assessed to determine the effect that the Proposed Action would have on the surrounding communities. FAA Order 1050.1F has not established a significance threshold or socioeconomics, so the following factors were used to assess for impacts to socioeconomics:

- Induce substantial economic growth in an area, either directly or indirectly (for example, through establishing projects in an undeveloped area).
- Disrupt or divide the physical arrangement of an established community.
- Cause extensive relocation when sufficient replacement housing is unavailable.
- Cause extensive relocation of community businesses that would cause severe economic hardship for affected communities.
- Disrupt local traffic patterns and substantially reduce the LOSs of roads serving an airport and its surrounding communities.
- Produce a substantial change in the community tax base.

3.12.2.2 Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, requires all federal agencies, to the greatest extent practicable and permitted by law, to make achieving environmental justice part of its mission by identifying and addressing disproportionate high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.

FAA Order 1050.1F provides guidance for the preparation of environmental justice analysis. Although FAA has not established a significance threshold for environmental justice, the FAA Order indicates that FAA should consider whether the action would have the potential to lead to a disproportionately high and adverse impact on a low-income or minority population because of significant impacts in other environmental impact categories or impacts on the physical or natural environment that affect an environmental justice population in a way that the FAA determines are unique to the environmental justice population and significant to that population. If a significant impact would affect low-income or minority populations at a disproportionately higher level than it would other population segments, an environmental justice issue is likely.

3.12.2.3 Children's Environmental Health and Safety Risks

Children's environmental health and safety risks include any risks to the health or safety that may disproportionately affect children that are attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soils, or products they might use or be exposed to. Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, requires all federal agencies to identify and assess environmental health and safety risks that may disproportionately affect children.

3.12.3 Environmental Consequences

This section describes the potential environmental consequences on socioeconomics, environmental justice, and children's environmental health and safety risks, from the Proposed Action and No Action Alternative.

3.12.3.1 No Action

Under the No Action Alternative, the construction and demolition activities would not occur. There would be no impacts to environmental justice or children's health and safety. However, there would be adverse impacts to socioeconomics. The current configuration at the airport would be deficient for Boeing's proposed national defense-related aircraft production and testing needs. Boeing would locate their new facilities in another market that is able to meet their national defense aircraft assembly and testing needs. If the facilities are relocated to a new market, then Boeing could not provide co-located facilities, resulting in loss of operational and economic efficiencies. This would result in substantial loss of economic activity in the St. Louis region and prevent the airport from receiving the development activity and ground rent income associated with the Proposed Action. Traffic would continue to increase in the area, despite the implementation of the Proposed Action. Therefore, under the No Action Alternative, there would be significant, long-term, adverse impacts to the regional economy.

3.12.3.2 Proposed Action

3.12.3.2.1 Socioeconomics

3.12.3.2.1.1Construction

The employment associated with the construction activities would provide temporary benefits to the community from the direct and indirect employment and income from the use of local labor and materials. It is anticipated that the construction of the Proposed Action would require construction workers from the local workforce; there would be no changes to population and housing in the region. The construction would not disrupt or divide the physical arrangement of an established community, cause extensive relocation of community business, and would not provide a substantial change in the community tax base.

During construction there would be a temporary increase in noise and air pollutant emissions. Fugitive dust emissions would be greatest during the initial site preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. Construction activities would incorporate BMPs and control measures to ensure fugitive dust emissions do not remain on surfaces or in the air beyond the property line of origin (Section 3.4.4.2.1). Construction noise could be audible near the sites, but it would be temporary and limited to normal working hours (Section 3.11). There are no residential areas or areas where children congregate within the project area, so there would be no impacts to children's health and safety.

3.12.3.2.1.2Operation

The operation of the Proposed Action would induce direct and indirect economic growth to the St. Louis economy. It is anticipated that the Proposed Action could employ up to 1,500 existing Boeing employees and up to 500 new jobs. However, this number is subject to change. It is assumed that most employees would be local to the area and not require relocation or housing. The Proposed Action would result in significant, long-term, beneficial impacts to the regional economy.

The airport would see an increase in revenue from the ground rent income associated with the project. According to the Boeing and airport lease agreement, Boeing pays an annual rent of $227,111 to the airport (St. Louis Lambert International Airport n.d.), and it is expected this would increase to approximately $2.63 million per year during the first phase of the project, with a potential increase of

approximately $0.3 million during second phase of the Proposed Action. The Brownleigh parcel is located on vacant land owned by the airport. The Northern Tract parcel currently has existing tenants (ATS Jet Center and GoJet Airlines) that would need to be relocated, likely to another location within the airport property, but it is not anticipated this relocation would substantially disrupt any operations. The Proposed Action would have minor, short-term, adverse impacts on two relocated businesses.

Traffic would increase in the region under the Proposed Action. Day-to-day operations would generate approximately 2,200 additional daily trips to the Brownleigh parcel and 500 daily trips to the Northern Tract parcel from the additional employees and deliveries (Table E-3 [Appendix E]). It is expected that most of the additional daily trips would use the existing routes used by Boeing employees. Minor improvements to select intersections including the addition of turn lanes, modified signal timing, and lane restriping would result in all intersections in the study area achieving or maintaining a LOS D or better (Table E-4 [Appendix E]). There would be intermittent (two to four times a month) road closures during the shuttling of aircraft across James S. McDonnell Boulevard between the Brownleigh Tract parcel and the airport over to the Northern Tract parcels. Security measures would be put in place to control vehicular traffic during the towing operations; once the tow operations are complete, the road would re-open to vehicular traffic. An effort would be made to avoid towing operations during high traffic periods. Each tract would have new access points: the Brownleigh Tract would have four access points and the Northern Tract would have two access points that would serve the site. The Proposed Action would not disrupt local traffic patterns or substantially reduce the LOSs serving the airport or surrounding communities. The Proposed Action would not disrupt or divide the physical arrangement of the community because the development of the Brownleigh and Northern Tract parcels is within the airport. The Proposed Action would have a minor, long-term, adverse impacts on local traffic patterns after the implementation of mitigation measures. The project would not disrupt or divide the physical arrangement of the established community.

3.12.3.2.2 Environmental Justice

As described previously in Section 3.12, there are minority and low-income populations within the study area. Construction and operation related effects from noise, air emissions, visual (including light emissions), and traffic or transportation could affect environmental justice populations.

3.12.3.2.2.1Construction

During construction there would be temporary elevated noise levels from the use of construction equipment and trucks during the demolition of existing facilities and building new facilities. As described in Section 3.11, the noise impacts would not result in noticeable impacts at off-airport properties because of the lack of sensitive receptors in direct proximity to the project site.

Construction would result in a temporary increase in air emissions. Fugitive dust emissions would be greatest during the initial site preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. However, construction activities would incorporate BMPs and control measures to ensure that fugitive dust emissions do not remain on surfaces or in the air beyond the property line of origin (Section 3.4.4.2.1).

Therefore, construction activities associated with the Proposed Action would not be expected to cause disproportionate high and adverse human health or environmental effects on minority or low-income populations.

3.12.3.2.2.2Operation

The operations, including aircraft traffic and aircraft engine testing, are not expected to significantly increase compared with existing noise levels. The Hush Houses would abate noise during aircraft engine testing. Additionally, as described in Section 3.11, any noise within the 500-foot noise radius does not include noise-sensitive receptors. Although operations would increase air emissions in the area, the emissions would not exceed NAAQS, conflict with the applicable SIP, or substantially affect air quality. The implementation of the Proposed Action would introduce additional light emissions. Lighting would be

similar to the lighting that is currently used on the airport property and the surrounding developments and would be in compliance with applicable regulations. Lighting would not be directed toward residential areas. Therefore, light emissions would not create a potential for annoyance for surrounding areas or nearby uses.

Therefore, operations associated with the Proposed Action would not be expected to cause disproportionate high and adverse human health or environmental effects on minority or low-income populations. A review of those impact categories that relate to the airport's neighboring communities was conducted. These categories include air quality, noise, compatible land use, light emissions and visual impacts, and socioeconomic impacts. According to the applicable sections in this EA, there are no significant impacts to any of the impact categories previously listed. Therefore, it can be concluded that the Proposed Action would not result in disproportionately high or adverse impacts to minority or low-income populations within the General Study Area, nor would it result in a disproportionate high and adverse impact to these populations.

3.12.3.2.3 Children's Environmental Health and Safety Risks

Construction and operation of the facility would take place within the airport, which has no residential areas or areas where children congregate. Therefore, there would be no impacts to children's health and safety.

3.12.4 Proposed Mitigation

Local intersection improvements, which may include but are not limited to the addition of turn lanes, modified signal timing, upgraded traffic signals, and lane restriping, as recommended in the Traffic Impact Study prepared for this project in coordination with St. Louis County and the Missouri Department of Transportation, will be constructed.

3.13 Visual Effects (Including Light Emissions)

Visual effects deal broadly with the extent to which the Proposed Action would either produce light emissions that create annoyance or interfere with activities, or contrast with, or detract from, the visual resources and/or the visual character of the existing environment (FAA 2020).

Light emissions include any light that emanates from a light source into the surrounding environment. Glare is a type of light emission that occurs when light is reflected off a surface (for example, window glass, solar panels, or reflective building surfaces) (FAA 2020).

Visual resources refer to the natural and constructed features that give a particular environment its aesthetic qualities. Attributes used to describe the visual resource value of an area include any significant views or vistas, landscape character, perceived aesthetic value, and uniqueness.

Visual character refers to the overall visual makeup of the existing environment (FAA 2020).

3.13.1 Affected Environment

3.13.1.1 Light Emissions

The airport is illuminated by various types of lighting for airfield and landside facilities. Lighting that emanates from the airfield includes runway, apron, and navigational lighting, such as hold position lights, stop-bar lights, and runway and taxiway lights and signage. Airfield lighting is located along taxiways and ramps to provide guidance during periods of low visibility and to assist aircraft movement on the airfield. Aircraft lighting, such as landing lights, position and navigation lights, beacon lights, and vehicle lighting, are other types of light sources on the airfield. Lighted landside facilities include buildings, roadways, and parking facilities. The airport is located in a highly urbanized area, which is made up of other development

that is also lighted and contributes to the overall light emissions in the area (St. Louis Lambert International Airport 2022).

The Northern Tract parcel contains existing structures with exterior lighting. The Brownleigh parcel is bordered by existing street lighting. The Gate Gourmet facility and bulk jet fuel storage facility located on the Brownleigh parcel also have exterior lighting.

3.13.1.2 Visual Resources and Visual Character

No visual resources requiring protection under federal, state, or local regulations are located near the Proposed Action areas. The visual character of the Brownleigh and Northern Tract parcels is typical of an airport setting.

Views into the portion of the Brownleigh parcel to be developed include open fields interspersed with wooded areas with varying degrees of tree cover. Much of the parcel contains visible remnants of road networks, curbing, foundations, and other infrastructure associated with the residential area and high school that previously existed onsite. Views out of the Brownleigh parcel include industrial development to the north and west, Interstate 170 to the east, and airport taxiways to the south.

Views into the Northern Tract parcel includes industrial buildings (two of which are listed or eligible for listing on the NRHP) which are vacant and in a state of neglect, and poorly maintained paved surfaces. Views out of the Northern Tract parcel include a railroad and industrial development to the north and airfield, taxiways, and industrial development to the east, west, and south.

3.13.2 Thresholds of Significance

3.13.2.1 Light Emissions

FAA Order 1050.1F, Exhibit 4-1, indicates that FAA has not established a significance threshold for light emissions. However, factors to consider include the degree to which the action would have the potential to: create annoyance or interfere with normal activities from light emissions, and to affect the visual character of the area due to the light emissions, including the importance, uniqueness, and aesthetic value of the affected visual resource.

3.13.2.2 Visual Resources and Visual Character

FAA also has not established a significance threshold for visual resources or visual character. Factors to consider include to the extent the action would have the potential to affect the nature of the visual character of the area, including the importance, uniqueness, and aesthetic value of the affected visual resources; to contrast with the visual resources or visual character in the study area; and to block or obstruct the views of visual resources, including whether these resources would still be viewable from other locations.

3.13.3 Environmental Consequences

3.13.3.1 No Action

Under the No Action Alternative, the project areas would remain in their current condition. Therefore, no impacts to visual effects would be anticipated.

3.13.3.2 Proposed Action

3.13.3.2.1 Light Emissions

Implementation of the Proposed Action would introduce additional light emissions to the Brownleigh and Northern Tract parcels. Lighting would be provided on and around buildings and on the taxiway connectors. Light emissions would be similar to lighting that is currently used on the airport property and the surrounding developments. Lighting would not be directed toward residential areas, and full cut-off light fixtures would be used to avoid light glare and comply with Dark Sky considerations. There are no light-sensitive neighboring areas to the Proposed Action site. Lighting for the site would be designed in compliance with St. Louis County Ordinance 1003.169, Lighting Regulations, and FAA lighting requirements. Light emissions from the Proposed Action are not expected to be significant, interfere with normal activities, affect airport operations, or create a potential for annoyance for surrounding areas or nearby uses.

3.13.3.2.2 Visual Resources and Visual Character

The Proposed Action would result in minor, short-term, direct, adverse impacts on visual resources during construction of the facilities. Adverse impacts on visual resources could occur during construction from stockpiles of materials, construction vehicles onsite, and partially constructed buildings. These impacts would be temporary and would end after completion of the construction activities.

The Proposed Action would introduce new visual elements to the project sites, including buildings, hangars, shelters, taxiway connectors, roadways, and parking lots. Following construction, the views would be consistent with the airport setting, and no significant impacts to visual resources and visual character are expected. The demolition of abandoned infrastructure on the Brownleigh parcel and vacant buildings on the Northern Tract parcel would have beneficial effects on the aesthetics of both locations.

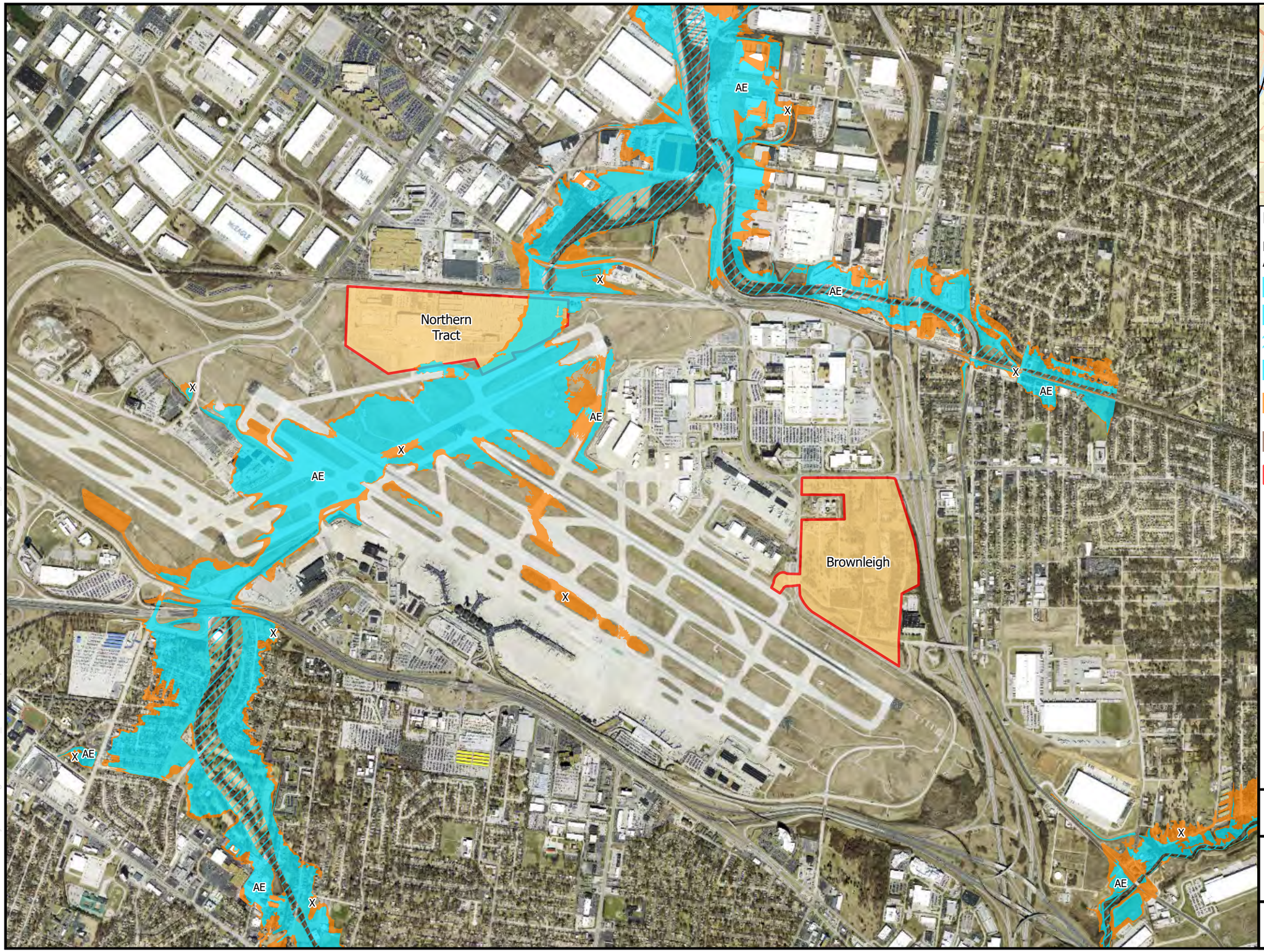
3.14 Water Resources

Water resources include both groundwater and surface water. Groundwater includes subsurface hydrologic resources. Groundwater properties are often described in terms of depth to aquifer or water table, water quality, and surrounding geologic composition. Stormwater flows, defined as runoff from precipitation that are increased by impervious surfaces, may introduce sediments and other contaminants into the water resource environment. Surface water resources include lakes, rivers, streams, and wetlands. These resources can be important to economic, ecological, recreational, and human health resources.

3.14.1 Affected Environment

3.14.1.1 Floodplains

Executive Order 11988, Floodplain Management, and the U.S. Department of Transportation Order 5650.2, Floodplain Management and Protection, require airport development actions to avoid, to the extent possible, the adverse impacts associated with the occupancy and modifications of floodplains. Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps 29189C0063K, 29189C0201K, and 29189C0202K indicate that the Northern Tract and Brownleigh parcels are not within a 100- or 500-year floodplain and are in an area with minimal flood hazard (FEMA n.d.). However, a portion of the Northern Tract parcel is located in the Missouri State Emergency Management Agency (SEMA) Preliminary Special Flood Hazard Area for Coldwater Creek (Missouri SEMA n.d.) as shown on Figure 3-7.



LEGEND:

Preliminary Special Flood Hazard Area

- A
- AE
- AE, FLOODWAY
- AH
- X, 0.2 PCT ANNUAL CHANCE FLOOD HAZARD
- X, AREA WITH REDUCED FLOOD RISK DUE TO LEVEE
- Detailed Study Area

N

BASE MAP SOURCE:
USGS USA Topo Map

0 1,000 2,000
FEET

Site Map
Boeing STL Expansion

Figure 3-7
Preliminary Special Flood Hazard Area

DATE: 8/23/2023

Jacobs

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3.14.1.2 Surface Water

MoDNR has authority for NPDES, which regulates stormwater under the *Clean Water Act*. All of the Northern Tract parcel and the western half of the Brownleigh parcel are within the Coldwater Creek drainage subbasin (USGS n.d.). Coldwater Creek flows north and east and discharges into to the Missouri River. Section 303(d) of the *Clean Water Act* requires states to list waterbodies that do not meet water quality standards and designated uses (impaired waters). The downstream section of Coldwater Creek (beginning approximately 7 miles downstream of the airport to the confluence of the Missouri River) is listed as an impaired waterbody for dissolved oxygen according to the 2022 listing and awaiting approval from EPA (MoDNR n.d.d). The east half of the Brownleigh Parcel drains through three stormwater collection pipe system to Maline Creek. Maline Creek flows east and discharges to the Mississippi River. The downstream section of Maline Creek (beginning approximately 8 miles downstream of the airport to the confluence of the Mississippi River) is listed as an impaired waterbody for chloride according to the 2022 listing and awaiting approval from EPA (MoDNR n.d.d). Coldwater Creek and Maline Creek have EPA-approved Total Maximum Daily Load for E. Coli (MoDNR 2023); however, the airport is not considered to contribute to the impairment and the operating permits do not require monitoring of this pollutant.

3.14.1.3 Groundwater

The Proposed Action is located within the Salem Plateau groundwater province (MoDNR 2021b). The main source of groundwater in this province is the Upper and Lower Ozark aquifers. Within St. Louis County, the aquifers are not a sole source, defined by EPA, where at least 50% of the drinking water for its service area and there are no reasonably available alternative drinking water sources should the aquifer become contaminated (EPA 2023a).

While Missouri American Water supplies water to portions of St. Louis County, including the airport, the majority of drinking water for the City of St. Louis is provided by the City of St. Louis Water Division. The Water Division has two water treatment plants that withdraw and treat water from the Missouri and Mississippi Rivers. The Mississippi River intake for the Chain of Rocks Water Treatment Plant is located 5 miles downstream from the confluence of the Missouri and Mississippi Rivers and 12 miles downstream from where Coldwater Creek discharges into the Missouri River. According to the 2022 *Consumer Confidence Report*, the two water treatment plants have never violated a water quality regulation in 118 years of testing (City of St. Louis Water Division 2022). The nearest private water well according to the MoDNR Well Installation Section Drilling Information Map is approximately 1 mile northwest of the Northern Tract parcel (MoDNR n.d.f).

3.14.2 Thresholds of Significance

3.14.2.1 Floodplains

FAA Order 1050.1F, Exhibit 4-1, establishes that significant impacts would occur if the action would cause notable adverse impacts on the natural and beneficial floodplain values.

3.14.2.2 Surface Water

FAA Order 1050.1F, Exhibit 4-1, establishes that significant impacts would occur if the action would exceed water quality standards established by federal, state, local, and tribal regulatory agencies, or contaminate public drinking water supply such that public health may be adversely affected.

3.14.2.3 Groundwater

FAA Order 1050.1F, Exhibit 4-1, establishes that significant impacts would occur if the action would exceed groundwater quality standards established by federal, state, local, and tribal regulatory agencies, or contaminate an aquifer used for public water supply such that public health may be adversely affected.

3.14.3 Environmental Consequences

3.14.3.1 No Action

3.14.3.1.1 Floodplains

Implementation of the No Action Alternative would not result in a change in current conditions. Therefore, no impacts to floodplains would occur.

3.14.3.1.2 Surface Water

Implementation of the No Action Alternative would not result in a change in current conditions. Therefore, no impacts to surface water would occur.

3.14.3.1.3 Groundwater

Implementation of the No Action Alternative would not result in a change in current conditions. Therefore, no impacts to groundwater would occur.

3.14.3.2 Proposed Action

3.14.3.2.1 Floodplains

All structures constructed as part of the Proposed Action that are located within the Northern Tract parcel Preliminary Special Flood Hazard Area for Coldwater Creek would be built higher than the base flood elevation. A floodplain development permit would be obtained from St. Louis County Public Works Department (St. Louis County n.d.) before construction if the Preliminary Special Flood Hazard Area becomes adopted. Additionally, increases in stormwater runoff in the project area resulting from increases in impervious areas would be offset by stormwater detention. Therefore, the Proposed Action is not anticipated to cause notable adverse impacts on the natural and beneficial floodplain values and significant impacts to floodplains from construction and operation of the Proposed Action are not anticipated.

3.14.3.2.2 Surface Water

Construction of the Proposed Action would require a Construction SWPPP and a Land Disturbance Permit from MoDNR (MoDNR n.d.c). The SWPPP would use stormwater BMPs to be implemented during construction to prevent impacts to surface water and will be approved before the start of any construction activities. BMPs could include the use of silt fence, vehicle tracking controls, good housekeeping, inspection and maintenance schedules, and training. Therefore, significant impacts to surface water due to construction of the Proposed Action are not anticipated.

Operation of the Proposed Action would be in accordance with NPDES permits issued by MoDNR that require routine inspections and monitoring and reporting of stormwater discharge. The Northern Tract and the Brownleigh parcels are located within the Industrial SWPPP boundary of the airport's NPDES Site-Specific Missouri State Operating Permit MO-0111210 (MoDNR Missouri Clean Water Commission 2022). Adjacent to the airport, Boeing's leased areas currently operate in accordance with NPDES Site-Specific Missouri State Operating Permit MO-0004782 (MoDNR 2021). Both of these permits expire March 31, 2026, and would be updated to include the operation of the Proposed Action. Permit MO-0111210 requires monthly sampling of stormwater before it discharges from the airport to Coldwater Creek at Outfall Number 006 to report any exceedance of chloride. Coldwater Creek was previously listed as an impaired waterbody for chloride but is now recommended for chloride delisting according to the 2022 delisting and awaiting EPA approval (MoDNR n.d.d).

The NPDES permits require Industrial Spill Prevention, Control, and Countermeasures (SPCCs) Plans that use BMPs such as use of collection facilities and proper disposal of waste products, protection of materials from stormwater, good housekeeping practices, inspections, secondary containment, and stormwater detention basin(s) maintenance. Therefore, the Proposed Action is not anticipated to exceed water quality standards established by federal, state, local, and tribal regulatory agencies, or contaminate public drinking water supply such that public health may be adversely affected. Significant impacts to surface water due to operation of the Proposed Action are not anticipated.

3.14.3.2.3 Groundwater

Construction and operation of the Proposed Action would comply the permits and plans discussed for stormwater in Section 3.14.3.2.2, which would also protect groundwater. The Northern Tract parcel currently operates under a Missouri Hazardous Waste Management Facility Part I Permit Number MOD000818963 (MoDNR 2017) because of prior contamination and cleanup activities, as described in Section 3.9.1.11. The permit requires continued groundwater monitoring of the site and additional requirements for any construction such as area-specific HASPs. The Northern Tract parcel has an Environmental Covenant agreement with a Soil Management Plan that limits contact with groundwater and soil during soil disturbance activities that would occur during construction (MoDNR, Boeing, and City of St. Louis 2020). Therefore, the Proposed Action is not anticipated to exceed groundwater quality standards established by federal, state, local, and tribal regulatory agencies, or contaminate an aquifer used for public water supply such that public health may be adversely affected. No significant impacts to groundwater are anticipated during construction and operation of the Proposed Action.

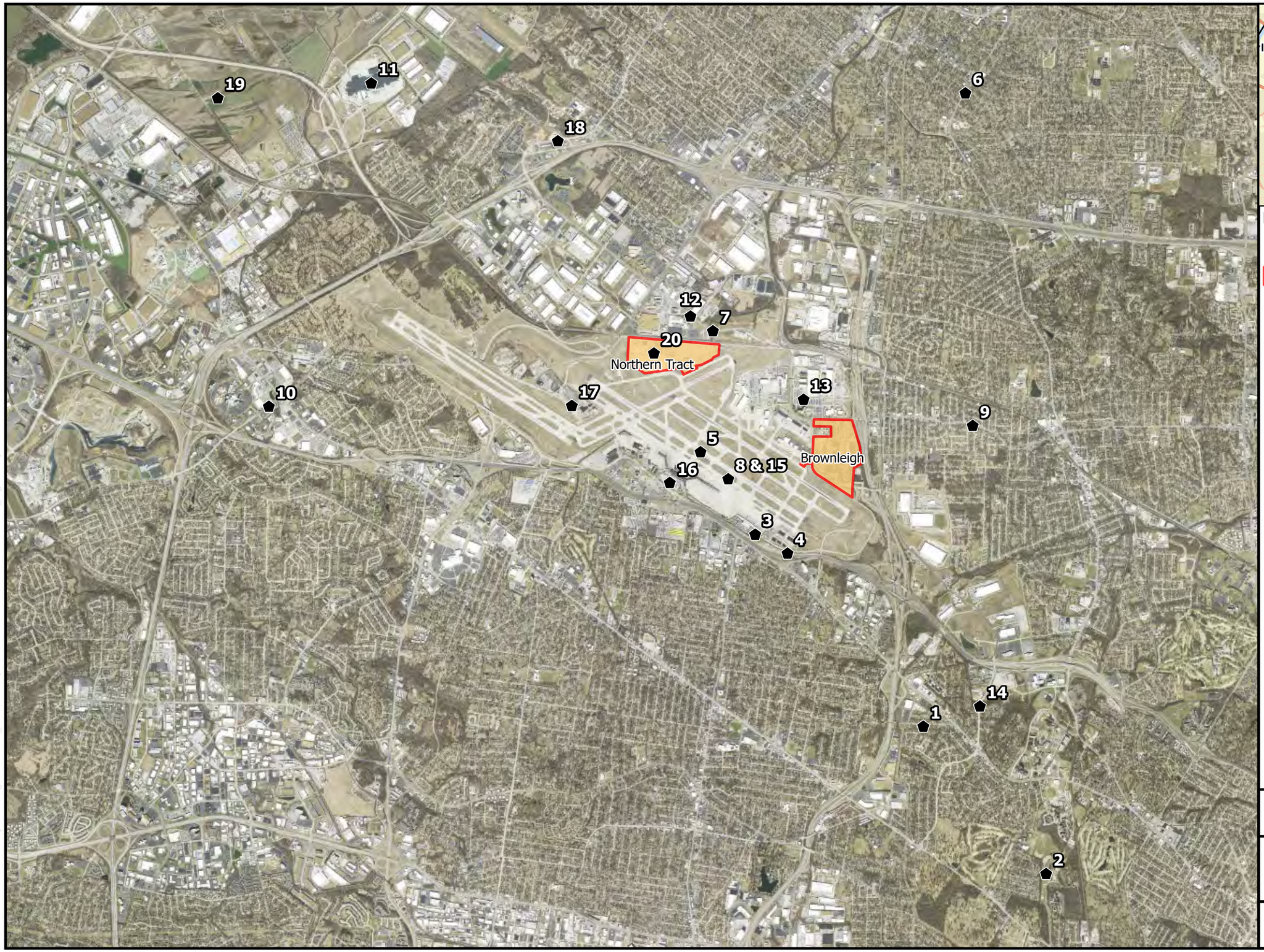
3.14.4 Proposed Mitigation

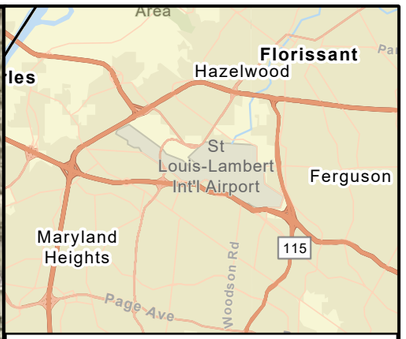
- All structures in the Northern Tract parcel's Preliminary Special Flood Hazard Area would be built higher than the base flood elevation.
- The contractor will obtain a floodplain development permit before construction if required.
- Stormwater detention would be included onsite.
- The contractor would obtain a Construction SWPPP and a Land Disturbance Permit from MoDNR.
- Operation would be in accordance with NPDES permits, including developing and implementing Industrial SPCCs.
- Requirements of the Environmental Covenant and its Soil Management Plan would be implemented to limit contact with soil and groundwater.

3.15 Cumulative Impacts

Cumulative impacts are those that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, whether federal or nonfederal. Cumulative impacts can result from individually insignificant, but collectively significant, actions taking place over a period of time.

The potential for cumulative impacts on the environment from the Proposed Action was evaluated by reviewing recently completed, ongoing, and planned actions that could affect the same environmental resources as the Proposed Action. Actions considered included construction projects that are underway or are programmed to occur in the near future (Table 3-7). Figure 3-8 shows the approximate location of each action included in Table 3-6. The significance of cumulative impacts was determined by the same thresholds described for each resource in Sections 3.4 through 3.14. For environmental resources that were eliminated from further consideration and where construction and implementation of the Proposed Action would have no environmental impact, there is no potential for an adverse cumulative environmental impact to occur. Therefore, the following discussion of cumulative impacts discusses only those environmental categories where environmental impacts could result from implementation of the Proposed Action.





LEGEND:

- Project Location
- Detailed Study Area

N

BASE MAP SOURCE:
USGS USA Topo Map

0 1,500 3,000 4,500 6,000 7,500
FEET

St. Louis Expansion,
St. Louis County, Missouri

Figure 3-8
Approximate Locations of Past, Present, and Future Actions Shown in Table 3-6

DATE: 8/23/2023

Jacobs

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Table 3-7. Past, Present, and Foreseeable Future Actions

Past Actions (2021 through 2023)	Present Actions (2024)	Future Actions (2025 through 2027)
1. Carson Villa I/I Reduction: MSD Project Clear constructed approximately 3,272 feet of sewer in the Cities of Bel-Ridge and Bel-Nor, and in the Spanish Lake area. This project was completed in June 2021.	6. Florissant Dunn Sanitary Relief: MSD Project Clear is constructing approximately 6,170 feet of wastewater sewer in the City of Florissant. Construction is estimated to start in spring 2023 and last for 2 years.	14. North Hanley Road (F) Resurfacing – Interstate 70 to Natural Bridge Road. This project provides for the pavement resurfacing of North Hanley Road from Natural Bridge Road to Interstate 70. Construction is expected in early 2025.
2. Park Drive Sanitary Relief: MSD Project Clear is replacing approximately 2,300 feet of sewer in the City of Pagedale near St. Vincent County Park. This project was completed in fall 2021.	7. James S. McDonnell Boulevard Bridge Number 164 Replacement: Located 900 feet east of Byasse Drive and 2,900 feet west of Eva Avenue. This project provides for the removal and replacement of Bridge Number 164. Proposed project would include the removal and remediation of contaminated soil in the project area. Construction is expected to start in fall 2023.	15. Reconstruction of Taxiway C from Taxiway Sierra to Taxiway Golf – Project 2: The project involves removing and replacing Taxiway C as well as reconfiguring adjacent taxiways according to the desired layout at Taxiway C6 (currently Papa) and between Taxiways Juliet and Golf. Work is scheduled to begin in March 2026 and last through October 2026.
3. New T2 Garage Entrance: The project created an additional entrance lane from Lambert International Boulevard for eastbound traffic and a new Terminal 2 garage entrance. This project was completed in spring 2023.	8. Reconstruction of Taxiway C from Taxiway Sierra to Taxiway Golf – Project 1: The project involves removing and replacing Taxiway C as well as reconfiguring adjacent taxiways according to the desired layout between Taxiway C6 (currently Papa) to Taxiway Juliet. Work is scheduled to begin in March 2024 and last through October 2024.	16. Consolidated Terminal Program: This project will include building a new 62-gate single terminal on the site of Terminal 1. Construction start date is currently to be determined.
4. Lindbergh International Boulevard Bridge Rehabilitation: Lindbergh International Boulevard Bridge at James S. McDonnell Boulevard and Lambert International Boulevard ramp to Interstate 70 eastbound. This project was completed in summer 2023.	9. Airport Road Resurfacing: Interstate 170 to 360 feet west of North Florissant Road. This project will provide pavement resurfacing, curb ramps and sidewalk repairs, and traffic signal upgrades. Construction set to begin August 2023.	17. West Airfield Program: This project will include relocation of the airfield maintenance facility, installation of a de-icing pad, and general improvements to the taxiway system. Construction start date is currently to be determined.
5. Reconstruction of Runway 12R-30L from Taxiway Romeo to Taxiway Golf – Project 2: The project involves removing and replacing Runway 12R-30L as well as narrowing its width to 150 feet and reconfiguring adjacent taxiways according to the desired layout. Work began in March 2023 and is scheduled to be completed in November 2023.	10. McKelvey Road Resurfacing: Natural Bridge Road to Interstate 270. This project provides for the pavement resurfacing of McKelvey Road from Natural Bridge Road to Interstate 270. Improvements include curb repairs, ADA-compliant curb ramps, sidewalk repairs, accessible pedestrian signals upgrades at traffic signals, and traffic signal replacement. Construction is expected to start in the spring 2024.	18. Howdershell Road Improvements: Howdershell Road between Utz Lane and Interstate 270. This project will resurface Howdershell Road and repair and replace curb ramps, existing sidewalk, and traffic signals, ensuring they are ADA compliant. Construction start date is currently to be determined.

Past Actions (2021 through 2023)	Present Actions (2024)	Future Actions (2025 through 2027)
	11. Hazelwood Business Park Redevelop St. Louis Mills Mall in Hazelwood into an industrial park.	19. Bridgeton Industrial Development: Proposed 500-acre industrial development in Bridgeton, Missouri, approximately 10 minutes from the airport.
	12. James S. McDonnell Culvert Replacement: Proposed removal and replacement of two culverts. Constructed tentatively expected to begin in fall of 2023.	20. GoJet and ATS Relocation: If Boeing's Phase 2 is determined to be necessary, GoJet and ATS would need to be moved to new facilities elsewhere on airport property. A location has not been determined at this time. The airport, in coordination with FAA, would evaluate available sites to determine compatibility with other airport uses. These sites would be evaluated for potential environmental impacts in a supplemental NEPA evaluation once a decision has been made to implement this portion of the Phase 2 development and suitable sites have been identified.
	13. Boeing airport: Existing Boeing operations including production and testing of a number of military aircraft, and production of composite parts for commercial aircraft.	

Sources: MSD n.d.b; St. Louis Lambert International Airport 2023; St. Louis County n.d.a.

ADA = *Americans with Disabilities Act*

MSD = Metropolitan St. Louis Sewer District

3.15.1 Air Quality

The Proposed Action would combine with other past, present, and future development projects in the area and contribute to cumulative air quality impacts. Emissions from these activities could collectively contribute to NAAQS and GHG emissions. The Proposed Action emissions would be less than CAA general conformity *de minimis* thresholds for criteria pollutants and quantitative reporting thresholds for GHG emissions. Operational air emissions from the Proposed Action would combine incrementally with other projects in the area.

3.15.2 Biological Resources

The Proposed Action would combine with other past, present, and future development projects in the area and contribute to cumulative impacts on biological resources from vegetation and habitat loss. The incremental contribution to other projects would be minor because the development is proposed on previously cleared or developed land with low value to wildlife and vegetation. The geographical separation between the Proposed Action and other construction and development that occurs in the region would limit the potential for adverse cumulative noise impacts on wildlife. With implementation of proposed protection measures, the cumulative impacts to biological resources would be less than significant.

3.15.3 Climate Change

The Proposed Action would combine with other past, present, and future development projects in the area and contribute to cumulative climate change impacts.

3.15.4 Hazardous Materials, Solid Waste, and Pollution Prevention

Construction and demolition projects would combine with other past, present, and future development projects in the area and have the potential for an incremental increase in generation of hazardous wastes. Additionally, operations under the Proposed Action, when combined with existing Boeing activities, could result in an increase in the quantity of hazardous waste generated by Boeing. With proper handling and disposal of hazardous materials and wastes during construction and operation, cumulative impacts to hazardous materials and pollution prevention would be less than significant.

The Proposed Action would contribute to minor, long-term, adverse cumulative impacts on solid waste when added to other construction and demolition projects in the vicinity. However, the construction waste generation would be temporary and would not exceed local capacities of landfills.

3.15.5 Historical, Architectural, Archaeological, and Cultural Resources

Impacts to historic resources are generally site specific and will not combine with impacts from other projects to cause significant impacts. For present and foreseeable future actions, independent of the Proposed Action, an analysis of historic, architectural, archaeological, and cultural resources would be required if there is an undertaking by a federal agency. For present and foreseeable future actions that do not involve an undertaking by a federal agency such as private development off-airport property that is not being done under the direct or indirect jurisdiction of a federal agency or does not require federal financial assistance or a federal permit, license, or approval, the private developer (not the airport or FAA) would be responsible to meet any local or state requirements. Therefore, implementation of the Proposed Action, when combined with other past, present, or reasonably foreseeable future projects, would not result in significant adverse impacts to historic, architectural, archaeological, and cultural resources.

3.15.6 Natural Resources and Energy Supply

The Proposed Action would combine with other past, present, and future development projects in the area and increase the demand on local energy supply, natural materials used in construction, and water use. The increased demand would be within the regional capacity, and no significant cumulative impacts would occur.

3.15.7 Noise and Noise-compatible Land Use

The Proposed Action would combine with other past, present, and future projects in the area and contribute to adverse cumulative effects on the noise environment if the timing of other construction projects in the surrounding area overlap with the timing of the construction of the Proposed Action. Impacts on the noise environment from these construction projects would be temporary and intermittent and would occur during daylight hours and primarily on weekdays. Therefore, cumulative noise impacts would not be significant. No new noise-sensitive land uses (such as residences, public schools, nursing homes, hospitals, libraries, and religious institutions) would be subject to noise levels of DNL 65 dB or greater due to an increase in noise of DNL 1.5 dB or greater due to the Proposed Action. Further, no existing noise-sensitive land uses within the DNL 65 dB would be subject to an increase in noise of DNL 1.5 dB or greater. Therefore, neither significant aircraft noise impacts would occur nor would there be new noncompatible land uses as a result of the Proposed Action. The development and operation of one or more of the past, present, and reasonably foreseeable future actions identified in Table 3-6 would not be expected to result in changes to the noise contours or result in noncompatible land uses. Therefore, it is reasonable to expect implementation of the Proposed Action, when combined with other past, present, or

reasonably foreseeable future projects would not result in significant adverse impacts to noise and noise-compatible land uses because there were no noise impacts associated with the Proposed Action.

3.15.8 Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks

The Proposed Action would combine with other past, present, and future development projects in the area and result in beneficial cumulative effects to economic development in the region. Cumulative impacts would derive from the induced construction employment, wages, and increased sales of construction-related materials, and the employment of up to 2,000 Boeing employees for operation of the new proposed facilities. Temporary construction impacts to traffic from construction vehicles and improvements (mitigations) at the site would cause minor, temporary traffic delays. There would not be significant increases in noise levels or air emission from the implementation of the Proposed Action. These nominal increases could interact with other local area development projects that could result in cumulative impacts to air quality and noise that may affect the surrounding area; however, these cumulative impacts would be negligible.

3.15.9 Visual Effects (Including Light Emissions)

The Proposed Action would combine with other past, present, and future development projects in the area and could contribute to adverse cumulative impacts to visual resources from stockpiles of materials, construction vehicles onsite, and partially constructed buildings. These impacts would be temporary and would end after completion of the construction activities. The interaction of the Proposed Action with other local area development projects could result in increased cumulative light emissions. Given the urban location of the Proposed Action and the already high amount of light emissions at the airport and in the surrounding area, any cumulative increase in light emissions would be negligible.

3.15.10 Water Resources

3.15.10.1 Floodplains

The Proposed Action would combine with other past, present, and future development projects in the area and could contribute to cumulative impacts to water resources. A portion of the Northern Tract parcel is located in the Missouri SEMA Preliminary Special Flood Hazard Area for Coldwater Creek. Impacts to the flood hazard area from the Proposed Action would be limited to the project area. The Proposed Action would be designed and permitted to ensure that the floodplain storage and conveyance capabilities would not decrease. Increased impervious surfaces associated with development have the potential to affect flooding rates. The increase in impervious surface under the Proposed Action would have a less than significant indirect effect on the flood hazard area because the stormwater controls would minimize runoff increase. Future projects at the airport, including the west airfield program, would also be required to confirm floodplain storage and conveyance capabilities would not decrease. No significant cumulative impacts to floodplains would occur.

3.15.10.2 Surface and Groundwater

The Proposed Action would not encroach upon any surface water and would not require the use of groundwater. Impacts from site runoff could interact with other projects and could impact water quality and water resources in the vicinity of the airport. In accordance with the Northern Tract Environmental Covenant agreement, contact with groundwater during ground-disturbing activities would be limited. Appropriate BMPs and stormwater controls would be used to minimize site runoff from reaching nearby surface water and groundwater. Therefore, no significant cumulative impacts to surface water or groundwater would occur.

3.15.11 Cumulative Impacts Conclusion

Under the No Action Alternative, the Proposed Action would not be implemented. The airport would continue to operate and serve aviation demands. Airport development would be subject to review and approval under NEPA and is not assumed under this alternative. Therefore, the No Action Alternative would not cause cumulative impacts when considered with past, present, and reasonably foreseeable future projects.

The level of cumulative impacts anticipated to occur within these environmental resource categories is not significant due to the types of past, present, and reasonably foreseeable future projects; the extent of the built environment in which they would occur; the lack of certain environmental resources in the area; and the mitigation measures identified for the Proposed Action. Therefore, implementation of the Proposed Action would not result in significant cumulative environmental impacts.

3.16 Summary

This section summarizes the potential environmental consequences of the Proposed Action and No Action Alternative. Table 3-8 compares the potential impacts of the Proposed Action and No Action Alternative on the resources analyzed in this EA.

Table 3-8. Summary of Impact Category Determinations and Protection Measures or Mitigation

Environmental Consequences: Resource	Proposed Action Alternative Impacts	Proposed Action Alternative Protection Measures or Mitigation	No Action Alternative Impacts	No Action Alternative Mitigation
Air Quality	Not significant	Obtain air permits and adhere to permit requirements. Implement BMPs during demolition, construction, and operations.	None	None
Biological Resources	Not significant	Complete presence or absence survey of abandoned structures for tricolored bat before demolition that occurs outside of the winter season (November 1 to March 31). Tree removal activities would occur during the winter season after bat pups have fledged. Because of the presence of habitat suitable for endangered bat species, consultation with the local USFWS office will be conducted before cutting trees in the Brownleigh parcel, if not able to complete during winter months. Remove trees during winter season. Conduct nesting bird surveys before any tree or brush clearing activities during the bird breeding season. If active nests are observed, stop-work orders should be put in place and the area around the nest cordoned off until the birds are fully fledged and nest sites are no longer active. Conduct red-headed woodpecker surveys before removal of trees containing cavities. Where feasible, incorporate native species and pollinator-friendly plants into landscaped areas.	None	None
Climate	Not significant	None required	None	None

Environmental Consequences: Resource	Proposed Action Alternative Impacts	Proposed Action Alternative Protection Measures or Mitigation	No Action Alternative Impacts	No Action Alternative Mitigation
Department of Transportation Act, Section 4(f)	Not significant	Section 4(f) use of historic properties would be mitigated through implementation of mitigation measures established in the Section 106 MOA.	None	None
Hazardous Materials, Solid Waste, and Pollution Prevention	Not significant	Adhere to all federal, state, and local laws and regulations that control the use, generation, disposal, and monitoring of hazardous materials and comply with applicable permits. Adhere to Missouri Hazardous Waste Management Facility Part I Permit Number MOD000818963 (MoDNR 2017) and the Environmental Covenant agreement (MoDNR, Boeing, and City of St. Louis 2020) for the Northern Tract parcel. A vapor intrusion mitigation system would be built to prevent intrusion of chemical vapors from existing contaminated groundwater and soil into the Phase 2 paint facility in the Northern Tract parcel. Implement SWPPP, construction site safety plans, and BMPs.	None	None
Historical, Architectural, Archaeological, and Cultural Resources	Not significant	The adverse effects on historic properties would be addressed through implementation of mitigation measures established in the Section 106 MOA. Adverse effects from demolition will be addressed with HABS documentation, photographic and drone recording, development of a website of the historic buildings, and a physical display at STLAA. Archaeological monitoring would be carried out at the Brownleigh and Northern Tract locations during ground-disturbing activities. Contact SHPO and FAA if resources uncovered during construction.	None	None
Natural Resources and Energy Supply	Not significant	None required	None	None
Noise and Noise-compatible Land Use	Not significant	None required	None	None
Socioeconomic, Environmental Justice, and Children's Environmental Health and Safety Risks	Not significant	Make traffic improvements as recommended in the Traffic Impact Study.	None	None
Visual Effects (Including Light Emissions)	Not significant	None required	None	None

Environmental Consequences: Resource	Proposed Action Alternative Impacts	Proposed Action Alternative Protection Measures or Mitigation	No Action Alternative Impacts	No Action Alternative Mitigation
Floodplains	Not significant	All structures in the Northern Tract parcel's Preliminary Special Flood Hazard Area would be built higher than the base flood elevation. A floodplain development permit would be obtained from St. Louis County Public Works Department before construction if required.	None	None
Surface Water	Not significant	Stormwater detention would be included onsite. A Construction SWPPP and Land Disturbance Permit would be obtained from MoDNR before construction. Operation would be in accordance with NPDES permits, including developing and implementing industrial SPCCs.	None	None
Groundwater	Not significant	Construction and operation would comply with the permits listed under "Surface Water" row. Adhere to Missouri Hazardous Waste Management Facility Part I Permit Number MOD000818963 (MoDNR 2017) and Environmental Covenant agreement for Northern Tract parcel. Requirements of the Soil Management Plan would be implemented to limit contact with soil and groundwater.	None	None
Cumulative Impacts	Not significant	None required	None	None