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## ENVIRONMENTAL CONSIDERATIONS

The impact of an airport on its environment is an important consideration in continued development. The objective of this section is to note the potential changes in environmental conditions, which could result from the recommendations made in the Facility Requirements section (page 65). This environmental overview is intended as a review of environmental conditions at JQF in accordance with FAA Order 1050.1F – *Environmental Impacts: Policies and Procedures*<sup>18</sup> and *1050.1F Desk Reference*.<sup>19</sup> Detailed environmental analyses will have to be performed, as each proposed project outlined on the ALP is implemented, to determine compliance with environmental rules and regulations.

### 6.1 Air Quality

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In accordance with the Clean Air Act of 1990 (as amended, 42 United States Code [USC] 7401 *et seq.*), the USEPA established the National Ambient Air Quality Standards (NAAQS), which defined six criteria pollutants and established ambient concentration limits to protect public health. Monitoring sites report data to the USEPA for the following six criteria air pollutants.

- Carbon monoxide (CO)
- Lead (Pb)
- Nitrogen dioxide (NO<sub>2</sub>)
- Ozone (O<sub>3</sub>)
- Particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>)<sup>20</sup>
- Sulfur dioxide (SO<sub>2</sub>)

The North Carolina Department of Environmental Quality, Division of Air Quality (NCDEQ-DAQ) was granted authority by the USEPA to administer the Clean Air Act in North Carolina.

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<sup>18</sup>Federal Aviation Administration, “Order 1050.1F – Environmental Impacts: Policies and Procedures,” July 16, 2015, <<http://www.faa.gov/>>, accessed November 1, 2017.

<sup>19</sup>Federal Aviation Administration Office of Environment and Energy, “1050.1F Desk Reference,” July 2015, <<http://www.faa.gov/>>, accessed November 1, 2017.

<sup>20</sup>PM<sub>10</sub> and PM<sub>2.5</sub> are acronyms for particulate matter consisting of particles smaller than 10 and 2.5 micrometers, respectively.

The Clean Air Act established primary (protect public health) and secondary (protect public welfare) standards, which are based on a pollutant's effect on plants and animals. Table 6.1-1 (page 115) illustrates the primary and secondary standards for the six criteria pollutants.

Geographic areas of the United States have been divided into attainment and nonattainment areas. Attainment areas are defined as those areas where the NAAQS for each pollutant is not exceeded. Nonattainment areas are defined as any portion of an air quality control region for which any pollutant exceeds NAAQS for a particular pollutant. In nonattainment areas, regional goals for achieving attainment of the NAAQS are addressed in the State Implementation Plan (SIP), as approved by the USEPA. Cabarrus County is a nonattainment area for USEPA's health-based standards for 8-hour ozone pollution. Cabarrus County is part of the 8-Hour Ozone (2008) area, which was designated in July 20, 2012. Implementation Plans and Designation of Areas; North Carolina; Redesignation of the Charlotte-Rock Hill, 2008 8-Hour Ozone Nonattainment Area to Attainment (Federal Register /Vol. 80, No. 144/Tuesday, July 28, 2015).<sup>21</sup>

USEPA collects emissions data for three criteria air pollutants:

- CO
- SO<sub>2</sub>
- PM<sub>10</sub> and PM<sub>2.5</sub>

and three precursors/promoters of criteria air pollutants:

- Volatile organic compounds (VOC)
- NO<sub>x</sub>
- Ammonia (NH<sub>3</sub>)

The Clean Air Act also lists 188 hazardous air pollutants (HAPs), which are known as *toxic air pollutants* or *air toxics*. However, monitoring of ambient concentrations of HAPs is not mandated by the Clean Air Act, but the USEPA is developing regulations to limit HAP emissions, thereby preventing ambient HAP concentrations from reaching levels that would pose significant health risks.

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<sup>21</sup>Environmental Protection Agency "40 CFR Parts 52 and 81, Approval and Promulgation of Implementation Plans and Designation of Areas; North Carolina; Redesignation of the Charlotte-Rock Hill, 2008 8-Hour Ozone Nonattainment Area to Attainment Final rule," Federal Register /Vol. 80, No. 144/Tuesday, July 28, 2015, <<https://www.gpo.gov/fdsys/>>, accessed March 16, 2018.

**Table 6.1-1  
National Ambient Air Quality Standards  
Concord-Padgett Regional Airport**

Pollutant		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)		primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead (Pb)		primary and secondary	Rolling 3-month average	0.15 µg/m <sup>3(1)</sup>	Not to be exceeded
Nitrogen Dioxide (NO <sub>2</sub> )		primary	1-hour	100 ppb	98 <sup>th</sup> percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary and secondary	Annual	53 ppb <sup>(2)</sup>	Annual Mean
Ozone (O <sub>3</sub> )		primary and secondary	8-hour	0.070 ppm <sup>(3)</sup>	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution	PM <sub>2.5</sub>	primary	Annual	12 µg/m <sup>3</sup>	annual mean, averaged over 3 years
		secondary	Annual	15 µg/m <sup>3</sup>	annual mean, averaged over 3 years
		primary and secondary	24-hour	35 µg/m <sup>3</sup>	98 <sup>th</sup> percentile, averaged over 3 years
	PM <sub>10</sub>	primary and secondary	24-hour	150 µg/m <sup>3</sup>	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO <sub>2</sub> )		primary	1-hour	75 ppb <sup>(4)</sup>	99 <sup>th</sup> percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Notes: Units of measure for the standards are parts per million (ppm) and parts per billion (ppb) by volume, milligrams per cubic meter of air (mg/m<sup>3</sup>), and micrograms per cubic meter of air (µg/m<sup>3</sup>).

<sup>(1)</sup>In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m<sup>3</sup> as a calendar quarter average) also remain in effect.

<sup>(2)</sup>The level of the annual NO<sub>2</sub> standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

<sup>(3)</sup>Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O<sub>3</sub> standards additionally remain in effect in some areas. Revocation of the previous (2008) O<sub>3</sub> standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.

<sup>(4)</sup>The previous SO<sub>2</sub> standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO<sub>2</sub> standards or is not meeting the requirements of a State Implementation Plan (SIP) call under the previous SO<sub>2</sub> standards (40 Code of Federal Regulation [CFR] 50.4(3)). A SIP call is a USEPA action requiring a state to resubmit all or part of its SIP to demonstrate attainment of the required NAAQS.

Source: USEPA, "NAAQS Table," <<https://www.epa.gov/criteria-air-pollutants/naaqs-table>>, accessed November 1, 2017.

## 6.1.1 Existing Conditions

Cabarrus County currently has no criteria pollutant monitoring sites. However, there was an ozone monitoring site on the Mecklenburg-Cabarrus County line, which was inactivated in 2015 (Table 6.1.1-1) and replaced in 2016 by the monitoring site at University Meadows.

<b>Information</b>	<b>Ozone</b>	
Site Name	County Line (NC Highway 29 N@ Mecklenburg-Cabarrus County line)	University Meadows (1600 Pavilion Boulevard)
AIRS Identification Number	37-119-1009	37-119-0046
County	Mecklenburg	Mecklenburg
Metropolitan Forecast Area	Charlotte	Charlotte
Land Use	Agricultural	Recreational (Neighborhood Park)
Elevation (ft. AMSL)	708.6	708.66
Years of Operation	1979 to 2015	2016 to Present
Reporting Agency	Mecklenburg County Air Quality	Mecklenburg County Air Quality
Source: USEPA, "AirData, Monitor Locator Map - Criteria Air Pollutants," < <a href="http://daq.state.nc.us/monitor/data/">http://daq.state.nc.us/monitor/data/</a> >, accessed November 1, 2017.		

AirData's<sup>22</sup> county air quality report illustrates air pollution values related to national standards for air quality. The county air quality report shows if a county's peak air pollution levels were above the national standards during a particular year. Counties that persistently exceed the standards may be classified nonattainment by USEPA and be required to take measures to improve their air quality. Each column of the county air quality report lists standards-related air pollution values for the six criteria pollutants for one year. The values shown are the highest reported during the year by the monitoring sites in the county. A value that exceeded the level of an air quality standard is **highlighted in red** (Table 6.1.1-2, page 117).

In addition, USEPA provides an air quality index report (AQI), which is an index for reporting daily air quality. The AQI determines how clean or polluted the air is in an area and what associated health effects might be of concern. The AQI focuses on health effects that may be experienced within a few hours or days after breathing polluted air. USEPA calculates the AQI for five major air pollutants regulated by the Clean Air Act: ground-level O<sub>3</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, CO, SO<sub>2</sub>, and NO<sub>2</sub>. For each of these pollutants, USEPA has established national air quality standards to protect public health (Table 6.1.1-3, page 118).

<sup>22</sup>US Environmental Protection Agency, "AirData: Access to Air Pollution Data," <<http://www.epa.gov/oar/data/>>, accessed November 1, 2017.

**Table 6.1.1-2  
Site Air Quality Report – Criteria Air Pollutants  
Concord-Padgett Regional Airport**

Year	Criteria Pollutant (O <sub>3</sub> [ppm])	
	2nd Max 1-hr	4nd Max 8-hr
2017	0.082*	0.068**
2016	0.087	0.074
2015	0.09	0.069
2014	0.082	0.068
2013	0.079	0.066
2012	0.105	0.085
2011	0.098	0.083
2010	0.106	0.082
2009	0.086	0.071
2008	0.109	0.093
2007	0.127	0.096
2006	0.115	0.093
2005	0.113	0.090
2004	0.104	0.083
2003	0.123	0.088
2002	0.130	0.107
2001	0.120	0.099
2000	0.141	0.101

Note:  
 2000-2015 Monitoring Site 37-119-1009  
 2016-Present Monitoring Site 37-119-0046  
 \*Monitoring date July 21, 2017  
 \*\*Monitoring date May 10, 2017  
 EPA Air Quality Standards:  
 Ozone: 0.12 ppm (1-hour average)  
 Ozone: 0.08 ppm (8-hour average)  
 Source: USEPA, "AirData Interactive Map,"  
 <[http://www.epa.gov/airdata/ad\\_maps.html](http://www.epa.gov/airdata/ad_maps.html)>, accessed November 1, 2017.

Table 6.1.1-4 (page 119) outlines the air quality index for Cabarrus and Mecklenburg Counties for years 2000 through 2017.

**Table 6.1.1-3  
Air Quality Index Values  
Concord-Padgett Regional Airport**

AQI Values	Levels of Concern	Health Concern
0 to 50	Good	Air quality is considered satisfactory, and air pollution poses little or no risk.
51 to 100	Moderate	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people. For example, people who are unusually sensitive to ozone may experience respiratory symptoms.
101 to 150	Unhealthy for Sensitive Groups	This means they are likely to be affected at lower levels than the general public. For example, people with lung disease are at greater risk from exposure to ozone, while people with either lung disease or heart disease are at greater risk from exposure to particle pollution. The general public is not likely to be affected when the AQI is in this range.
151 to 200	Unhealthy	Everyone may begin to experience health effects when AQI values are between 151 and 200. Members of sensitive groups may experience more serious health effects.
201 to 300	Very Unhealthy	AQI values between 201 and 300 trigger a health alert, meaning everyone may experience more serious health effects.
301 to 500	Hazardous	AQI values over 300 trigger health warnings of emergency conditions. The entire population is more likely to be affected.

Source: AirNow, "Air Quality Index," <<http://airnow.gov/index.cfm?action=aqibasics.aqi>>, accessed November 1, 2017.

## 6.1.2 Conformity Requirements

The FAA has a list of existing exemptions that may qualify from general conformity requirements,<sup>23</sup> including

<sup>23</sup>FAA, *Federal Presumed to Conform Actions, Under General Conformity*, Federal Register / Vol. 72, No. 145/Monday, July 30, 2007/Notices, <[http://www.faa.gov/airports/resources/publications/federal\\_register\\_notices/media/environmental\\_72fr41576.pdf](http://www.faa.gov/airports/resources/publications/federal_register_notices/media/environmental_72fr41576.pdf)>, accessed November 1, 2017.

**Table 6.1.1-4  
Air Quality Index Report  
Concord-Padgett Regional Airport**

Year	Number of Days when Air Quality was...				AQI Statistics			Number of Days when AQI pollutant was... O <sub>3</sub>
	Good	Moderate	Unhealthy for Sensitive Groups	Unhealthy	Maximum	90th percentile	Median	
<b>Mecklenburg County</b>								
2017*	168	102	3	0	115	64	47	162
2016	244	115	6	1	154	77	44	225
2015	245	111	9	0	129	71	44	209
2014	265	100	0	0	90	61	43	135
2013	283	83	0	0	87	58	41	154
2012	239	118	9	0	142	71	45	154
2011	186	162	17	0	145	84	50	146
2010	167	183	14	1	151	79	53	125
2009	264	157	4	0	117	68	48	84
2008	196	123	14	3	164	84	46	173
2007	175	156	30	4	205	100	51	186
2006	171	170	20	4	169	90	53	132
2005	168	167	28	2	190	97	52	116
2004	174	172	18	2	179	85	52	106
2003	200	153	8	4	197	79	47	112
2002	198	122	31	13	202	109	49	141
2001	172	158	29	6	177	100	51	136
2000	155	170	33	8	205	104	55	127
<b>Cabarrus County</b>								
2004	77	44	0	0	94	71	42	0
2003	71	49	1	0	103	67	42	0
2002	75	47	0	0	89	67	41	0
2001	75	44	1	0	109	65	41	0
2000	61	53	1	0	104	76	45	0
*Through September 30, 2017. Source: USEPA, "Air Quality Index Report," < <a href="http://www.epa.gov/airdata/ad_rep_aqi.html">http://www.epa.gov/airdata/ad_rep_aqi.html</a> >, accessed November 1, 2017.								

*...Planning, Studies, and Provisions of Technical Assistance...Planning and information-related actions do not represent implementation of operational changes at the airport and therefore do not result in emission increases. Consequently, actions such as those listed below may be considered exempt from the Rule: FAA funding and acceptance of Master Plans and Updates...*

Determination of compliance with air quality rules and regulations will have to be performed, as each proposed project outlined on the ALP is implemented.

## 6.2 Biological Resources

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The Endangered Species Act of 1973, as amended, gives the Secretary of the Interior, acting for the Secretary of Commerce, U.S. Fish and Wildlife Service (USFWS), and National Marine Fisheries Service (NMFS), the power to protect and conserve forms of wildlife and plants deemed to be in serious jeopardy. Section 7 of the Act requires federal agencies or their designated non-federal representatives, in consultation with and assisted by the USFWS, to ensure that their actions are not likely to jeopardize the continued existence of endangered and threatened species or result in the destruction or adverse modification of critical habitat of such species.

The North Carolina Natural Heritage Program's (NCNHP) online database and the USFWS website were consulted regarding current federal and state listed species within Cabarrus County. Listed species of concern and their respective federal and state status and county status are identified in Table 6.2-1 (page 121).

Prior to development of the proposed projects outlined on the ALP in undeveloped areas, a threatened and endangered species survey will be performed to achieve compliance with Section 7 of the Endangered Species Act, as well as to coordinate with federal and state environmental agencies.

## 6.3 Climate

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Carbon credits<sup>24</sup> are a key component of national and international attempts to mitigate the growth in concentrations of greenhouse gases (GHGs). One carbon credit is equal to one ton of carbon dioxide or in some markets, carbon dioxide equivalent gases. Carbon trading is an application of an emissions trading approach. Greenhouse gas emissions are capped and then markets are used to allocate the emissions among the group of regulated sources. There are two distinct types of carbon credits: carbon offset credits (COCs) and carbon reduction credits (CRCs). COCs consist of clean forms of energy production, wind, solar, hydro, and bio-fuels. CRC consists of the collection and storage of carbon from our atmosphere through bio-sequestration (reforestation, forestation), ocean and soil collection, and storage efforts. The impact of proposed projects on climate change is of increasing concern. GHGs are those that trap heat in the earth's atmosphere. Both naturally occurring and anthropogenic

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<sup>24</sup>Wikipedia, the free encyclopedia, Carbon Credit, <[http://en.wikipedia.org/wiki/Carbon\\_credit](http://en.wikipedia.org/wiki/Carbon_credit)>, accessed November 1, 2017.

**Table 6.2-1  
Protected Flora and Fauna Summary  
Concord-Padgett Regional Airport**

Species	Status		Habitat Description
	Federal/ State	County	
<b>Federal Listed Species</b>			
Northern long-eared bat <i>Myotis septentrionalis</i>	T	Probable/ Potential	Caves and abandoned mines (winter hibernacula). In summer, underneath bark or in cavities or crevices of trees with loose or exfoliating bark, with DBH greater than 3 inches
Carolina heelsplitter <i>Lasmigona decorata</i>	E	Historic	Cool, slow-moving, small to medium sized streams and rivers. Usually found in mud, muddy sand, or muddy gravel substrates along stable, well shaded stream banks
Bald eagle <i>Haliaeetus leucocephalus</i>	BGEPA	Current	Coastlines, rivers, and large lakes, which provide adequate feeding grounds
Schweinitz's sunflower <i>Helianthus schweinitzii</i>	E	Current	Open woods, roadsides, power line rights-of-way with Mecklenburg/ Iredell/Enon/Poindexter soils
American eel <i>Anguilla rostrata</i>	FSC	Current	Streams, rivers, and muddy or silt-bottomed lakes during their freshwater stage, as well as oceanic waters, coastal bays and estuaries
Carolina darter <i>Etheostoma collis collis</i>	FSC	Current	Muddy and rocky pools and backwaters of sluggish headwaters and creeks
Carolina creekshell <i>Villosa vaughaniana</i>	FSC	Current	Silty sand or clay along the banks of small streams
Prairie birdsfoot-trefoil <i>Lotus unifoliolatus</i> var. <i>Helleri</i>	FSC	Current	Road banks, clearings, and old fields, usually in dry, barren, clay soils
Virginia quillwort <i>Isoetes virginica</i>	FSC	Historic	Mudflat
<b>State Listed Species</b>			
Thick-pod white wild indigo <i>Baptisia alba</i>	T	Current	Dry, sandy habitats, especially longleaf pine sandhills
Prairie blue wild indigo <i>Baptisia australis</i> var. <i>aberrans</i>	E	Historical	Thin, moist woods, edges, glades, and barrens
Carolina thistle <i>Cirsium carolinianum</i>	E	Historical	Open environments: rocky woods, roadsides, valleys, and thickets with full sun and dry soils
Indian physic <i>Gillenia stipulata</i>	T	Historical	Forests and open woodlands; primarily over mafic rock
Red Canada lily <i>Lilium canadense</i> spp. <i>editorium</i>	E	Current	Bogs, wet meadows, and balds
Yellow Canada lily <i>Lilium canadense</i> spp. <i>canadense</i>	E	Current	Wet meadows
Small's portulaca <i>Portulaca smallii</i>	T	Current	Thin soils on granite and diabase flat rocks
Northern cup-plant <i>Silphium perfoliatum</i>	T	Current	Marshes, low meadows, and alluvial woods
Tall larkspur <i>Delphinium exaltatum</i>	E	Historical	Grassy balds, glades, woodlands; primarily over mafic rock

**Table 6.2-1  
Protected Flora and Fauna Summary  
Concord-Padgett Regional Airport**

Species	Status		Habitat Description
	Federal/ State	County	
Eastern lampmussel <i>Lampsilis radiata radiata</i>	T	Current	Drainages usually with medium to coarse sands
Creeper <i>Strophitus undulatus</i>	T	Current	Silt, sand, gravel, and mixed substrates. Headwater streams to large rivers and lakes
Carolina creekshell <i>Villosa vaughaniana</i>	E	Current	Silty sand or clay along small stream banks. In areas of abundance, found in substrates of mixed sand and gravel

DBH – diameter at breast height  
BGEPA – Bald and Golden Eagle Protection Act  
E – Endangered  
FSC – Federal Species of Concern  
T – Threatened  
Source: North Carolina Department of Environment and Natural Resources, “The North Carolina Natural Heritage Program Database,” <<http://www.ncnhp.org/Pages/heritagedata.html>>, accessed November 1, 2017.

(man-made) GHGs include water vapor (H<sub>2</sub>O), carbon dioxide (CO<sub>2</sub>),<sup>25</sup> methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and O<sub>3</sub>.<sup>26</sup>

Research has shown that there is a direct link between fuel combustion and GHG emissions. Therefore, sources that require fuel or power at an airport are the primary sources that would generate GHGs. Aircraft are probably the most often cited air pollutant source, but they produce the same types of emissions as cars. Aircraft jet engines, like many other vehicle engines, produce CO<sub>2</sub>, H<sub>2</sub>O, NO<sub>x</sub>, CO, SO<sub>x</sub>; unburned or partially combusted hydrocarbons (also known VOCs); particulates; and other trace compounds.

According to most international reviews, aviation emissions comprise a small but potentially important percentage of anthropogenic (man-made) GHGs and other emissions that contribute to global warming. The Intergovernmental Panel on Climate Change (IPCC) estimates that global aircraft emissions account for about 3.5 percent of the total quantity of GHGs from human activities.<sup>27</sup> In

<sup>25</sup>All greenhouse gas inventories measure carbon dioxide emissions, but beyond carbon dioxide, different inventories include different greenhouse gases (GHGs).

<sup>26</sup>Several classes of halogenated substances that contain fluorine, chlorine, or bromine are also greenhouse gases, but they are, for the most part, solely a product of industrial activities. For example, chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) are halocarbons that contain chlorine, while halocarbons that contain bromine are referred to as bromofluorocarbons (i.e., halons) or sulfur (sulfur hexafluoride: SF<sub>6</sub>).

<sup>27</sup>IPCC Report as referenced in United States General Accounting Office (USGAO), “Environment: Aviation’s Effects on the Global Atmosphere are Potentially Significant and Expected to Grow,” USGAO/RCED-00-57, February 2000, page 4.

terms of United States contribution, the United States General Accounting Office (USGAO) reports that aviation accounts for about 3 percent of total US greenhouse gas emissions from human sources compared with other industrial sources, including the remainder of the transportation sector (23 percent) and industry (41 percent).<sup>28</sup>

The scientific community is developing areas of further study to more precisely estimate aviation's effects on the global atmosphere. The FAA is currently leading or participating in several efforts intended to clarify the role that commercial aviation plays in GHGs and climate change. The most comprehensive and multi-year program quantifying climate change effects of aviation is the Aviation Climate Change Research Initiative (ACCRI) funded by FAA and National Aeronautics and Space Administration (NASA). The ACCRI will reduce key scientific uncertainties in quantifying aviation-related climate impacts and provide timely scientific input for policy-making decisions. FAA also funds Project 12 of the Partnership for Air Transportation Noise and Emissions Reduction (PARTNER) Center of Excellence research initiative to quantify the effects of aircraft exhaust and contrails on global and US climate and atmospheric composition. Finally, the Transportation Research Board's (TRB) Airport Cooperative Research Program completed project 02-06, publishing ACRP Report 11: *Guidebook on Preparing Airport Greenhouse Gas Emission Inventories*.<sup>29</sup> While not policy, airports use this as a resource to assist them in preparing GHG emission inventories when applicable.

Determination of compliance with climate rules and regulations will have to be performed, as each proposed project outlined on the ALP is implemented.

## 6.4 Coastal Resources

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NCDEQ Division of Coastal Management (NCDEQ-DCM) is the federally approved coastal zone management authority and administers the North Carolina Coastal Area Management Act (CAMA) in the 20 coastal counties of North Carolina. As a part of CAMA, areas of environmental concern (AECs) were designated within the 20 coastal counties and rules set for managing development within these areas. An AEC is an area of natural importance that may be easily destroyed by erosion or flooding or may have environmental, social, economic, or aesthetic values that make it valuable to North Carolina.

In addition, the Coastal Barrier Resource Act of 1982 (CBRA, Public Law [PL] 97-348, 16 USC 3501 *et seq.*), Coastal Barrier Improvement Act of 1990, and Coastal Barrier Resources Reauthorization Act of 2000 prohibit the use of federal funds for projects that would impact undeveloped coastal barrier units in the Coastal Barrier Resources System. Coastal barriers are unique land forms that provide protection for diverse aquatic habitats and serve as the first line of defense against the impacts of

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<sup>28</sup>*Ibid*, page 14, USGAO cites available USEPA data from 1997.

<sup>29</sup>Transportation Research Board, Airport Cooperative Research Program, "ACRP Report 11: *Guidebook on Preparing Airport Greenhouse Gas Emission Inventories*," 2009, prepared by Wylie Laboratories, Inc., Arlington, VA.

severe coastal storms and erosion. Located at the interface of land and sea, the dominant physical factors responsible for shaping coastal land forms are tidal range, wave energy, and sediment supply from rivers and older, preexisting coastal sand bodies. Relative changes in local sea level also profoundly affect coastal barrier diversity. CBRA units have been designated and maps showing their locations are on file with the US Fish and Wildlife Service (USFWS).

Cabarrus County is not a coastal county and therefore, would not be required to comply with either the CAMA or CBRA (as amended).

**6.5 Department of Transportation Act: Section 4(f)** Section 4(f) of the United States Department of Transportation (USDOT) Act of 1966 states that the Secretary of Transportation shall not approve any program or project, which requires the use of any publicly owned land from a public park; recreation area; wildlife and waterfowl refuge of national, state, or local significance as determined by federal, state, or local officials having jurisdiction thereof; or any land from an historic structure of national, state, or local significance as so determined by such officials unless:

- There is no feasible and prudent alternative to the use of such land
- The project includes all possible planning to minimize harm to the land resulting from such use

Prior to development of the proposed projects, outlined on the ALP, on currently undeveloped areas within the JQF property boundary, a cultural resources survey shall be performed to determine whether there are any Section 4(f) properties located onsite.

Also, if additional property is to be acquired, compliance with Section 4(f) will be necessary, as well as coordination with appropriate federal and state agencies. In addition, an assessment will be performed to determine land use compatibility and location of recreational areas in respect to potential impacts under the requirements of Section 4(f).

## 6.6 Farmlands

The United States Department of Agriculture (USDA) oversees the Farmland Protection Policy Act of 1981 (FPPA, PL 97-98). The purpose of the FPPA is to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses. The FPPA establishes the protocol and criteria to be used by federal agencies to:

- Identify and consider the adverse effects of their programs on the preservation of farmland

- Consider alternative actions, as appropriate, that could lessen adverse effects
- Ensure that their programs are compatible with state and units of local government and private programs and policies to protect farmland

The FPPA does not provide authority to withhold federal assistance for projects that convert farmland to nonagricultural uses. For the purposes of implementing the FPPA, farmland is defined as prime or unique farmlands or farmland that is determined by the state or unit of local government agency to be farmland of statewide or local importance.<sup>30</sup> The Natural Resources Conservation Service (NRCS) farmland definitions are:<sup>31</sup>

- **Prime farmland** is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oil seed crops and that is available for these uses. It has the combination of soil properties, growing season, and moisture supply needed to produce sustained high yields of crops in an economic manner if it is treated and managed according to acceptable farming methods. In general, prime farmland has an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, an acceptable level of acidity or alkalinity, an acceptable content of salt or sodium, and few or no rocks. Its soils are permeable to water and air. Prime farmland is not excessively eroded or saturated with water for long periods of time, and it either does not flood frequently during the growing season or is protected from flooding.
- **Unique farmland** is land other than prime farmland that is used for the production of specific high-value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality and/or high yields of a specific crop when treated and managed according to acceptable farming methods.
- **Statewide or local importance** is land, in addition to prime and unique farmlands, that is of statewide or local importance for the production of food, feed, fiber, forage, and oil seed crops. Criteria for defining and delineating this land are to be determined by the appropriate state agency or agencies. Generally, additional farmlands of statewide or local importance include those that are nearly prime farmland and economically produce high yields of crops when treated and managed according to acceptable farming methods. Some may produce as high a yield as prime farmlands if conditions are favorable.

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<sup>30</sup>Code of Federal Regulations Title 7 – Agriculture, Chapter VI – Natural Resources Conservation Service, Department of Agriculture, Part 658 – Farmland Protection Policy Act. (January 1, 2006 edition).

<sup>31</sup>United States Department of Agriculture (October 1993). Soil Survey Manual Handbook No. 18.

Development of the proposed projects outlined on the ALP will have an impact on soils by converting undeveloped land (Figure 6.6-1, page 126); however, these soils are not considered prime, unique, or statewide important because of the presence of zoning and land use ordinances for the City of Concord<sup>32</sup> and Cabarrus County.<sup>33</sup> Therefore, there would be no impact to farmland.

Table 6.6-1 (page 128) illustrates the degree and soil limitations that affect small commercial buildings, buildings without basements, and roads and streets. The limitations indicate the extent to which the soils are limited by soil features that affect the specified use.

- **Not limited** – indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected.
- **Somewhat limited** – indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected.
- **Very limited** – indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

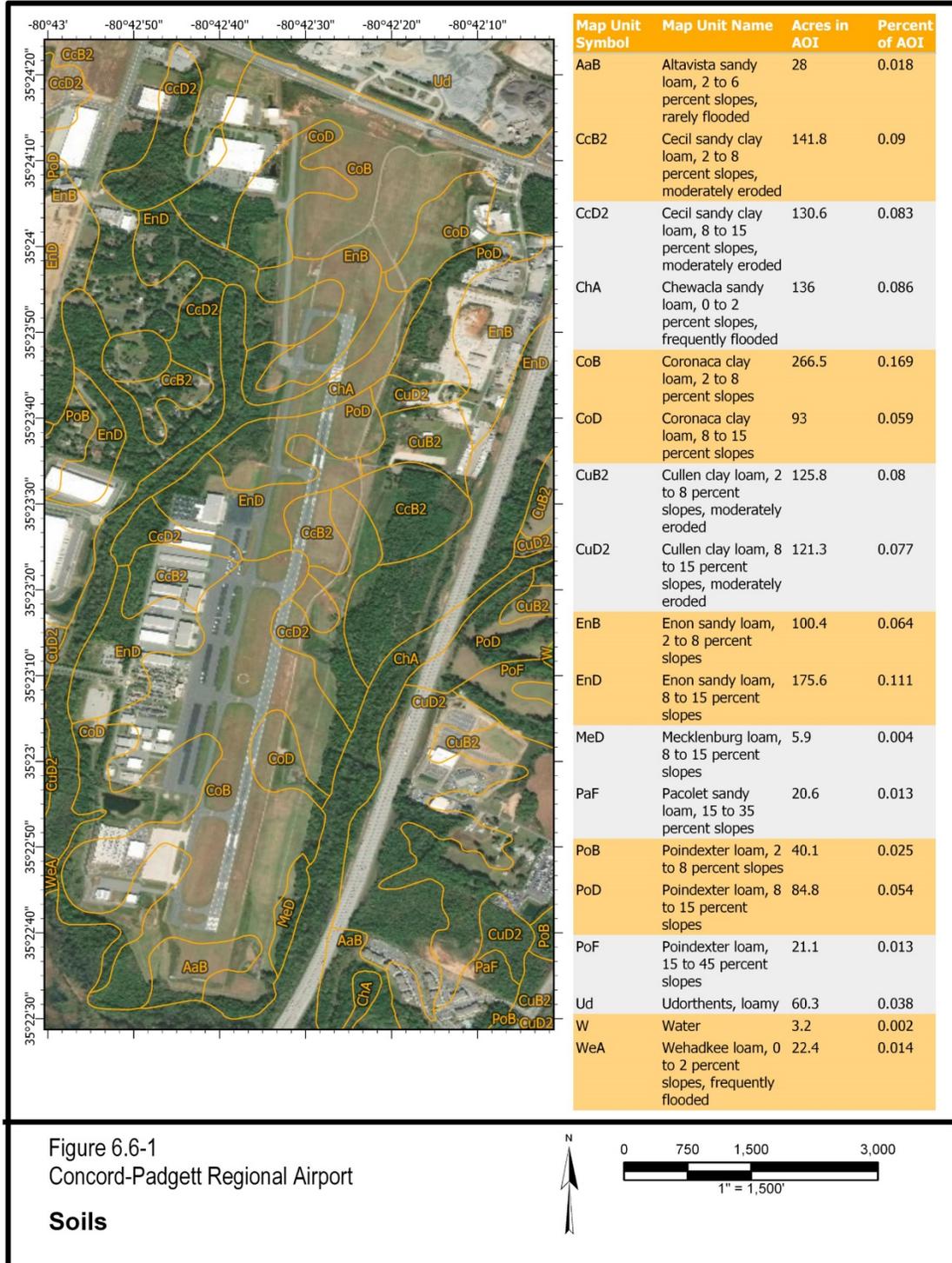
Special studies will be performed where soil limitations are very limited prior to development of the proposed projects outlined on the ALP.

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<sup>32</sup>City of Concord, *City of Concord, Concord Development Ordinance*.

<<http://www.concordnc.gov/Departments/Planning/Zoning-Services/Development-Ordinance>>, accessed November 15, 2017.

<sup>33</sup>Cabarrus County, *Cabarrus County Zoning Ordinance*. Approved by the Cabarrus County Planning & Zoning Commission November 18, 1993. Adopted by the Cabarrus County Board of Commissioners December 6, 1993. Effective December 20, 1993. Amended October 16, 2017. <<https://www.cabarruscounty.us/resources/zoning-ordinance>>, accessed November 15, 2017.



**Table 6.6-1  
Soils Located within Airport Property  
Concord-Padgett Regional Airport**

Map Unit Symbol	Map Unit Name	Development Suitability and Limitations for Use			Farmland Classification
		Small Commercial Buildings	Buildings without Basements	Roads and Streets	
AaB	Altavista sandy loam, 2% to 6% slopes	very limited	very limited	very limited	Prime farmland
CcB2	Cecil sandy clay loam, 2% to 8% slopes, eroded	somewhat limited	not limited	somewhat limited	Prime farmland
CcD2	Cecil sandy clay loam, 8% to 15% slopes, eroded	very limited	somewhat limited	somewhat limited	Statewide important
ChA	Chewacla sandy loam, frequently flooded	very limited	very limited	very limited	Prime farmland, if drained
CoB	Coronaca clay loam, 2% to 8% slopes	somewhat limited	not limited	somewhat limited	Prime farmland
CoD	Coronaca clay loam, 8% to 15% slopes	very limited	somewhat limited	somewhat limited	Statewide important
CuB2	Cullen clay loam, 2% to 8% slopes, eroded	somewhat limited	somewhat limited	somewhat limited	Prime farmland
CuD2	Cullen clay loam, 8% to 15% slopes, eroded	very limited	somewhat limited	somewhat limited	Statewide important
EnB	Enon sandy loam, 2% to 8% slopes	very limited	very limited	very limited	Prime farmland
EnD	Enon sandy loam, 8% to 15% slopes	very limited	very limited	very limited	Statewide important
MeD	Mecklenburg loam 8% to 15% slopes	very limited	very limited	very limited	Statewide important
PaF	Pacolet sandy loam, 15% to 35% slopes	very limited	very limited	very limited	Not prime farmland
PoB	Poindexter loam, 2% to 8% slopes	somewhat limited	not limited	not limited	Statewide important
PoD	Poindexter loam, 8% to 15% slopes	very limited	somewhat limited	somewhat limited	Statewide important
PoF	Poindexter loam, 15% to 45% slopes	very limited	very limited	very limited	Not prime farmland
Ud	Udorthents, loamy	very limited	very limited	very limited	Not prime farmland
W	Water	not rated	not rated	not rated	Not prime farmland
WeA	Wehadkee loam, 0% to 2% slopes, frequently flooded	very limited	very limited	very limited	Not prime farmland

Source: Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture, "Web Soil Survey," <<http://websoilsurvey.nrcs.usda.gov/>>, accessed November 14, 2017.

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## 6.7 Hazardous Materials, Solid Waste, and Pollution Prevention

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### 6.7.1 Hazardous Materials

The purpose of a Phase I Environmental Site Assessment (ESA) is to identify, to the extent feasible, pursuant to American Society of Testing and Materials (ASTM) E1527-13 - *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, Recognized Environmental Conditions (RECs)*, the RECs in connection with the property. The ASTM Standard Practice E1527-13 defines *good commercial and customary practice for conducting an environmental Proposed Action project area assessment of a parcel of commercial real estate with respect to the range of contaminants within the scope of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and to petroleum products*. This practice is intended to permit a user to satisfy one of the requirements to qualify for the *innocent landowner defense* to CERCLA liability.

Prior to development of the proposed projects outlined on the ALP, an ESA should be performed of the airport property and the surrounding environs to determine the potential extent (if any) of hazardous material contamination.

### 6.7.2 Solid Waste

Development of the proposed projects outlined on the ALP would not have a direct effect on solid waste collection or disposal, other than during actual construction of the proposed projects. Building and hangar development would generate solid waste for disposal and would be the responsibility of the occupants of the facilities. There are two solid waste facilities in Cabarrus County:<sup>34</sup>

- BFI-Charlotte Motor Speedway Landfill V (located at 5105 Morehead Road, Concord, North Carolina, five miles east of JQF), which has been in operation since 1992, accepts municipal solid waste and construction and demolition materials from Cabarrus County and other North Carolina counties with approval. The landfill has approximately 27.96 years of capacity left<sup>35</sup>
- NC Highway 49 Construction and Demolition (C&D) Landfill and Recycling (located at 2100 Speedrail Court, Harrisburg, North Carolina) accepts most debris from new construction and demolition sites including drywall, shingles (non-asbestos), non-hazardous dirt, concrete, plant-mix asphalt, brick, rock pavers, and wood

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<sup>34</sup>North Carolina Department of Environment and Natural Resources Division of Waste Management, "Solid Waste Program," <<http://wastenot.enr.state.nc.us/sw/swfacilitylist.asp>>, accessed November 15, 2017.

<sup>35</sup>North Carolina Department of Environment and Natural Resources Division of Waste Management, "Municipal Solid Waste Landfill Capacity, FY 2007-2008," <[http://www.wastenotnc.org/swhome/AR07\\_08/AR07\\_08.pdf](http://www.wastenotnc.org/swhome/AR07_08/AR07_08.pdf)>, accessed November 15, 2017.

The existing landfills will not be adversely affected by development of the proposed projects outlined on the ALP.

### 6.7.3 Pollution Prevention

JQF must comply with applicable regulations pertaining to the use, storage, and disposal of hazardous materials as outlined in FAA Order 1050.10B, *Prevention, Control and Abatement of Environmental Pollution at FAA Facilities*; FAA Order 1050.14A, *Polychlorinated Biphenyls (PCB) in the National Airspace System*; FAA Order 1050.15A, *Underground Storage Tanks at FAA Facilities*; FAA Order 1050.18, *Chlorofluorocarbons and Halon Use at FAA Facilities*; and FAA Advisory Circular 150/5320-15 – *Management of Airport Industrial Wastes*. This compliance can be in the form of a Spill Prevention, Control, and Countermeasures Plan (SPCC).<sup>36</sup>

Although each SPCC is unique to the facility, there are certain elements that must be included in order for the SPCC Plan to comply with the provisions of 40 CFR Part 112, *Oil Pollution Prevention*. Three areas that should be addressed in the Plan are:

- 1) Operating procedures the facility implements to prevent oil spills
- 2) Control measures installed to prevent oil from entering navigable waters or adjoining shorelines
- 3) Countermeasures to contain, clean up, and mitigate the effects of an oil spill that has an impact on navigable waters or adjoining shorelines

Other important elements of a SPCC include, but are not limited to, the following:

- Professional Engineer certification
- Plan must follow the sequence of 40 CFR §112.7, *General Requirements for Spill Prevention, Control, and Countermeasures Plans* or provide cross-references to the requirements in 40 CFR §112.7, *General Requirements for Spill Prevention, Control, and Countermeasures Plans*
- Facility diagram
- Oil spill predictions
- Facility drainage
- Facility inspections
- Site security
- Five-year plan review
- Management approval

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<sup>36</sup>Code of Federal Regulations, “Title 40, Protection of Environment, Part 112 – Oil Pollution Prevention,” <<http://ecfr.gpoaccess.gov/>>, accessed November 15, 2017.

- Appropriate secondary containment or diversionary structures
- Loading/unloading requirements and procedures for tank trucks
- Personnel training and oil discharge prevention briefings
- Bulk storage container compliance
- Transfer procedures and equipment (including piping)

Properties within the Airport boundary that utilize hazardous materials are required to have SPCCs in place.

## 6.8 Historic, Architectural, Archaeological, and Cultural Resources

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Section 106 of the National Historic Preservation Act of 1966, as amended through 1992 (16 United States Code [USC] 470), and the Archaeological and Historic Preservation Act of 1974 require that a state or federal agency with jurisdiction over a specific project must identify and evaluate affected cultural resources, assess the project's effect on such resources, and grant opportunity for comment. Cultural resources are evaluated by their eligibility for placement on the National Register of Historic Places (NRHP).

### 6.8.1 Previously Recorded Archaeological Sites

Four previous cultural resource surveys have examined the Concord-Padgett Regional Airport property. These investigations previously covered portions of the Airport property (Table 6.8.1-1, page 132). These archaeological investigations resulted in the location of 13 sites on or within 0.5-miles of the Airport property. The majority of these are prehistoric lithic scatters dated to the Archaic period. These sites are generally small, low-density lithic scatters that have since been destroyed by construction of the Concord-Padgett Regional Airport. The majority of these sites, including 31CA43, are not eligible for inclusion in the NRHP; the one exception is 31CA45, which is listed as potentially eligible.

Between 1975 and 1978, the Department of Sociology and Anthropology at the University of North Carolina, Charlotte conducted an archaeological impact assessment for what was going to be the Cabarrus County Airport. This investigation resulted in the location of one archaeological site (31CA43) on the Airport property and three archaeological sites (31CA42; 31CA44; 31CA45) within 0.5-miles of the Airport property.

**Table 6.8.1-1  
Known Cultural Resources  
Concord-Padgett Regional Airport**

Survey Description		Date	Agency	Consultant	Citation
Archaeological Impact Assessment: Cabarrus County Airport		1975-1976	FAA	UNC - Charlotte	Fischer, 1978
An Archaeological Reconnaissance of the Proposed Cabarrus County Airport, Poplar Tent Site: Cabarrus County, North Carolina		1989	FAA	J. Alan May, Ph.D.	May, 1990
Cultural Resources Evaluation of Concord-Padgett Regional Airport Improvements		2002	FAA	Brockington and Associates, Inc.	Brockington, 2002
Cultural Resources Survey of the New Terminal Property at Concord-Padgett Regional Airport, Cabarrus County, North Carolina		2015	FAA	Brockington and Associates, Inc.	Brockington, 2015
Site	Type	Cultural Affiliation	Location	NRHP Status	Citation
31CA42	Lithic Scatter	Middle and Late Archaic	0.5-mile radius	Ineligible - Destroyed	Fischer, 1978; May, 1990
31CA43	Lithic Scatter	General Archaic	Within Proposed Action Project Area	Ineligible - Destroyed	Fischer, 1978; May, 1990
31CA44	Lithic Scatter	Late Archaic	0.5-mile radius	Ineligible - Destroyed	Fischer, 1978; May, 1990
31CA45	Artifact Scatter	Early, Middle, and Late Archaic; Woodland	0.5-mile radius	Potentially Eligible	Fischer, 1978; May, 1990
31CA185	Lithic Scatter	General Archaic	0.5-mile radius	Ineligible	May, 1990
31CA186	Lithic Scatter	General Archaic	0.5-mile radius	Ineligible	May, 1990
31CA187	Lithic Scatter	General Archaic	0.5-mile radius	Ineligible	May, 1990
31CA188	Lithic Scatter	General Archaic	0.5-mile radius	Ineligible - Destroyed	May, 1990
31CA189	Lithic Scatter	General Archaic	0.5-mile radius	Ineligible - Destroyed	May, 1990
31CA190	Lithic Scatter	General Archaic	0.5-mile radius	Ineligible - Destroyed	May, 1990
31CA191	Domestic Site	20th Century Historic	0.5-mile radius	Ineligible - Destroyed	May, 1990
31CA192	Artifact Scatter; Domestic Site	General Archaic; 20th Century Historic	0.5-mile radius	Ineligible - Destroyed	May, 1990
31CA193	Artifact Scatter	General Archaic; General Historic	0.5-mile radius	Ineligible - Destroyed	May, 1990

Source: Tabert, Bright & Ellington, Inc. (November 2017).

## 6.8.2 Previously Recorded Historical Resources

The four previous cultural resource surveys revealed no previously recorded NRHP significant properties within the Airport property or within a 0.5-mile radius. Several historic buildings were identified during archaeological investigations from 1975 to 1976. It was stated that these buildings dated to 1935 or later and were of no particular significance. The buildings were destroyed prior to construction of the Concord-Padgett Regional Airport. Additionally, a building was observed on a 1993 aerial; however, the building was not shown on the 1969 Kannapolis, NC US Geologic Survey (USGS) topographic quadrangle, and may post-date this map. In any case, the building is no longer extant due to large-scale ground disturbance and grading for airport purposes since 1994. The

pedestrian and windshield surveys were conducted to document any historic architectural resources within 0.5-mile of the Airport property during the cultural resource surveys. The locations of buildings shown on the 1969 Kannapolis, NC USGS topographic quadrangle were revisited; however, none of these buildings are still standing. These buildings were demolished prior to airport-related development in the vicinity. No other historic architectural resources were located during the surveys.

Prior to development of the proposed projects outlined on the ALP on currently undeveloped areas within the JQF property boundary, a cultural resources survey shall be performed to determine whether there are any Section 106 properties located on-site. Also, if additional property is to be acquired, compliance with Section 106 will be necessary, as well as coordination with appropriate federal and state agencies.

## 6.9 Compatible Land Use

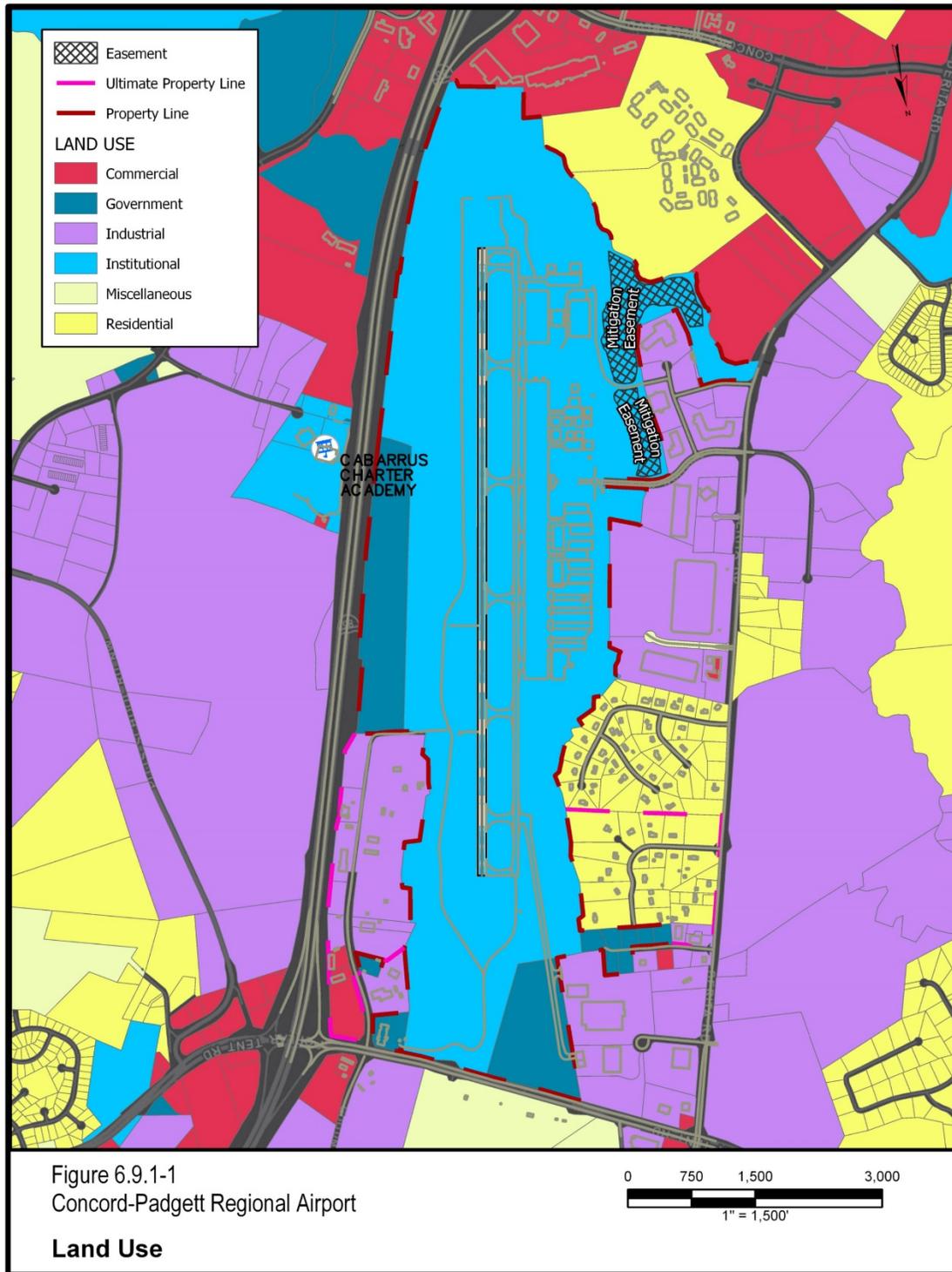
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Land use is the measure and description of activities on local and regional natural systems.

### 6.9.1 Existing Land Use and Zoning

The City of Concord is located in the Piedmont of North Carolina in the western half of Cabarrus County. Interstate 85 (I-85) traverses the City along its northern border, making Concord easily accessible and provides residents easy access to destinations throughout the region. The I-485 beltway provides residents with linkages throughout the metropolitan region. The City is home to the Concord-Padgett Regional Airport, one of the busiest airports in the state. JQF is generally bounded by I-85 to the east, Concord Mills Boulevard to the south, Derita Road to the west, and Poplar Tent Road to the north. Land use surrounding JQF includes (Figure 6.9.1-1, page 134):

- **North** – Vulcan Lands Inc. (gravel quarry) within the city limits
- **East** – undeveloped land within the city limits
- **South** – commercial development and undeveloped land within the city limits
- **West** – residential development (Misty Woods, Bethany Woods, and Twin Creeks subdivisions), industrial development (Concord Airport Business Park, Concord Airport Industrial Park, and West Winds Industrial Park), and undeveloped land within the city limits and Cabarrus County



JQF and the area around the Airport are zoned either by the City of Concord<sup>37</sup> or Cabarrus County<sup>38</sup> (Figure 6.9.1-2, page 136). City zoning includes:

- **General Commercial (C-2)** – provides areas for general commercial activities designed to serve the community such as shopping centers, repair shops, wholesale businesses, and retail sales with limited outdoor display of goods and limited outdoor operations. This district promotes a broad range of commercial operations and services necessary for large regions of the County, providing community balance. Rezoning to the C-2 District should be avoided adjacent to any single-family Residential Zoning District (RE, RL, RM-1 or RM-2). C-2 Districts should be located on or within proximity to major thoroughfares. This shall not apply where an existing building or structure used as permitted within the C-2 District has been established prior to the adoption of this Ordinance on a parcel subject to an application for rezoning.
- **Light Industrial (I-1, I-1-CD, I-1-CU)** – provides for areas that contain a mix of light manufacturing uses, office park and limited retail and service uses that service the industrial uses in an attractive business park setting with proper screening and buffering, all compatible with adjoining uses. I-1 Districts should include areas which continue the orderly development and concentration of light industrial uses. I-1 Districts should be located so as to have direct access to or within proximity to a major or minor thoroughfare. This shall not apply where an existing building or structure used as permitted within the I-1 District has been established prior to the adoption of this Ordinance on a parcel subject to an application for rezoning.
- **General Industrial (I-2, I-2-CD)** – provides for areas of heavy and concentrated fabrication, manufacturing and industrial uses which are suitable based upon adjacent land uses, access to transportation and the availability of public services and facilities. It is the intent of this district to provide an environment for industries that is unencumbered by nearby residential or commercial development. I-2 Districts should be located in areas where conflicts with other uses can be minimized to promote orderly transitions and buffers between uses. The I-2 District is established in order to provide sites for activities which involve major transportation terminals, and manufacturing facilities that have a greater impact on the surrounding area than industries found in the I-1 District. I-2 Districts should not be located adjacent to any property that is zoned for residential use, including mixed-use developments with an adjacent residential designation. I-2 Districts should be restricted so as to have direct access to or within proximity to a major or minor thoroughfare. This shall not apply where an existing building or structure

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<sup>37</sup>City of Concord, *City of Concord, Concord Development Ordinance*.

<<http://www.concordnc.gov/Departments/Planning/Zoning-Services/Development-Ordinance>>, accessed November 15, 2017.

<sup>38</sup>Cabarrus County, *Cabarrus County Zoning Ordinance*. Approved by the Cabarrus County Planning & Zoning Commission November 18, 1993. Adopted by the Cabarrus County Board of Commissioners December 6, 1993 Effective December 20, 1993. Amended October 16, 2017. <<https://www.cabarruscounty.us/resources/zoning-ordinance>>, accessed November 15, 2017.

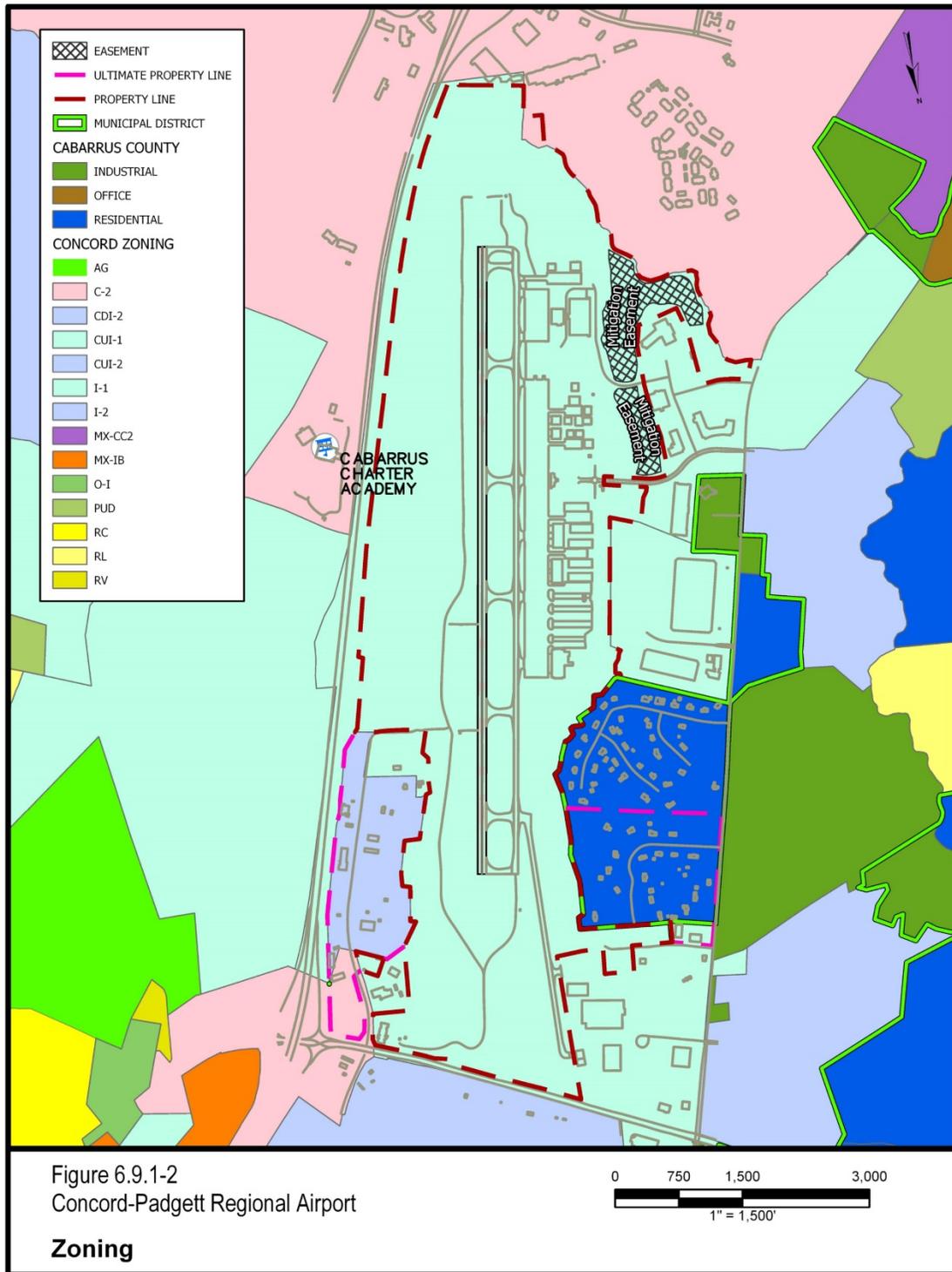


Figure 6.9.1-2  
Concord-Padgett Regional Airport

**Zoning**

used as permitted within the I-2 District has been established prior to the adoption of this Ordinance on a parcel subject to an application for rezoning.

County zoning includes:

- **Low Density Residential (LDR)** – permits development with a low density residential community character. This district allows conventional, open space and amenity subdivisions. This district is located where public utilities are available or are envisioned available within the next two to five years.

## 6.9.2 Airport Overlay District

Both the City of Concord<sup>39</sup> and Cabarrus County<sup>40</sup> have airport overlay districts (AOD), which protect JQF's imaginary surfaces and sections within their zoning ordinances specifically dedicated to aviation.

Potential land use impacts associated with the proposed projects outlined on the ALP are described in terms of airport and community planning efforts, jurisdictional coordination, and development patterns. The compatibility of existing and planned land uses in the vicinity of an airport is usually associated with two factors.

- The extent of noise impacts from and to the airport and related development
- Consistency with local land use plans and development policies

## 6.9.3 Land Use Plan

The City of Concord's Land Use Plan<sup>41</sup> for the Concord Mills area, in which JQF is located, summarizes the existing development as follows:

- Major activity center in a rapidly developing area
- Close Proximity to Concord-Padgett Regional Airport

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<sup>39</sup>City of Concord, *City of Concord, Concord Development Ordinance*. Article 9 Special Purpose and Overlay Districts – Section 9.9 Airport Overlay (AOD) District. <<http://www.concordnc.gov/Departments/Planning/Zoning-Services/Development-Ordinance>>, accessed November 15, 2017.

<sup>40</sup>Cabarrus County, *Cabarrus County, North Carolina Zoning Ordinance*. Chapter 4 – Overlay Zones - Part IV. Airport-Overlay District (AOD). Approved by the Cabarrus County Planning & Zoning Commission November 18, 1993. Adopted by the Cabarrus County Board of Commissioners December 6, 1993. Effective December 20, 1993. Amended October 16, 2017. <<https://www.cabarruscounty.us/resources/zoning-ordinance>>, accessed November 15, 2017.

<sup>41</sup>City of Concord, “2015 Land Use Plan,” Adopted by City Council June 8, 2004, Revision adopted by City Council May 10, 2007, <<http://www.concordnc.gov/Departments/Planning/Planning-Services/Area-Plans/2015-Land-Use-Plan>>, accessed November 15, 2017.

- Upscale residential development beginning to occur nearby in the Christenbury Farms planned unit development
- Derita Road will eventually be improved to a four-lane facility
- Extension of Speedway Boulevard/Concord Mills through the Christenbury Farms property.
- Traffic congestion is becoming more of a problem, as road capacity is already being exceeded in some locations
- Available "greenfield" land is becoming more limited. Some undeveloped tracts have plans in place for pending developments

The recommendations in the 2015 Land Use Plan for the Concord Mills area include:

- To become a viable mixed-use area, additional higher-density residential development should be encouraged on remaining tracts of land.
- Develop safe pedestrian linkages during the site plan and plat review for future developments. Parcel to parcel connections should be carefully reviewed during the site plan review process.
- Ensure a well-defined internal street network with good road connections to adjoining parcels are developed during site plan review. This will help build an internal block structure and avoids forcing vehicular traffic on the arterial road network.

#### 6.9.4 Potential Compatible Land Use Impacts

Potential land use impacts associated with future development of the Concord-Padgett Regional Airport are described in terms of airport and community planning efforts, jurisdictional coordination, and development patterns. The compatibility of existing and planned land uses in the vicinity of an airport is usually associated with two factors:

- The extent of noise impacts from and to the airport and related development
- Consistency with local land use plans and development policies

The principal factors influencing land use in the vicinity of an airport often include height obstructions, airport safety zones, and noise. Overall, noise exposure is often the most objectionable interference of the airport with the surrounding environment, as the compatibility with existing and planned land uses in the airport's vicinity is normally associated with the extent of noise impacts. Therefore, prior to development of the proposed projects outlined on the ALP, a noise survey shall be performed to determine the extent of noise impacts on the surrounding land use. Table 6.9.4-1 (page 139) identifies FAA land use compatibility standards, as identified by the 65, 70, 75, and 80 day-night average sound level (DNL) noise contours.

**Table 6.9.4-1  
Compatible Land Use for Noise Level Ranges  
Concord-Padgett Regional Airport**

Land Use	Yearly DNL in Decibels (dB)					
	Below 65	65-70	70-75	75-80	80-85	Over 85
Residential, other than mobile homes and transient lodgings	Y	N	N	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N	N	N	N	N
<b>Public Use</b>						
Schools	Y	N	N	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Government services	Y	Y	25	30	N	N
Transportation	Y	Y	Y	Y	Y	Y
Parking	Y	Y	Y	Y	Y	Y
<b>Commercial Use</b>						
Offices, businesses, and professional	Y	Y	25	30	N	N
Wholesale and retail – building materials, hardware, and farm equipment	Y	Y	Y	Y	Y	N
Retail trade – general	Y	Y	25	30	N	N
Utilities	Y	Y	Y	Y	Y	N
Communication	Y	Y	25	30	N	N
<b>Manufacturing and Production</b>						
Manufacturing – general	Y	Y	Y	Y	Y	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y	Y	Y	Y	Y
Livestock farming and breeding	Y	Y	Y	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
<b>Recreational</b>						
Outdoor sports areas and spectator sports	Y	Y	Y	N	N	N
Outdoor music amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts, and camps	Y	Y	Y	N	N	N
Golf courses, riding stables, and water recreation	Y	Y	25	30	N	N

**Notes:**

Y (Yes) – Land use and related structures compatible without restrictions.

N (No) – Land use and related structures are not compatible and should be prohibited.

NLR – Noise level reduction (outdoor and indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.

25 or 30 – Land use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated in design and construction of structure.

Source: Federal Aviation Administration, Advisory Circular 150/5020-1 – *Noise Control and Compatibility Planning for Airports*, August 1983, <<http://www.faa.gov/>>, accessed November 15, 2017.

It should be noted that the responsibility for determining the acceptable and permissible land use in the vicinity of an airport remains with local authorities in response to local needs and values in achieving compatible land use.

## 6.10 Natural Resources and Energy Supply

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Executive Order 13123, *Greening the Government through Efficient Energy Management*,<sup>42</sup> encourages each federal agency to expand the use of renewable energy within its facilities and in its activities. Executive Order 13123, *Greening the Government through Efficient Energy Management*, also requires each federal agency to reduce petroleum use, total energy use and associated air emissions, and water consumption in its facilities.

The assessment of natural resources and energy supply generally entails altered requirements for stationary facilities. The Proposed Action would require the construction of the terminal building and associated access road and parking areas. Small amounts of fossil fuels would be expended, and these materials are generally not retrievable. However, these materials are not in short supply, and their use would not have an adverse effect upon continued availability of these resources.

An increase in energy consumption could be offset with the installation of LED runway and taxiway lights. These lights use considerably less power than traditional incandescent lights. A switch to an alternative fuel supply for airport vehicles such as compressed natural gas could also help offset increased energy consumption.

## 6.11 Noise

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### 6.11.1 Definition

Noise is unwanted sound. Sound has three basic characteristics: frequency (or pitch), magnitude (technically called level and popularly called loudness), and time pattern. Frequency is measured in cycles per second or hertz (Hz). The human ear is capable of discerning sounds in the range from 20 Hz (a rumbling sound) to 20,000 Hz (a hissing sound). The level of a sound is measured as the sound pressure level (SPL). The unit of SPL is the decibel (dB). Because hearing is logarithmic, not linear, the SPL is a logarithmic quantity. Thus, a 10-dB increase in level reflects a 10-time increase in sound energy, and a 20-dB increase in level reflects a 100-time increase in sound energy. There are many different time patterns of sounds, ranging from a sound that is continuous in frequency and level for

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<sup>42</sup>Federal Register, Vol. 64, No. 109, June 8, 1999, “Greening the Government through Efficient Energy Management,” <<http://www.ofee.gov/>>, accessed November 15, 2017.

a long period (such as the 60 Hz hum from a fluorescent lamp) to a complex mixture of frequencies and levels over a short period (such as a door slam). Environmental noises are typically described in terms of the A-weighted sound level (dB-A), a measure that reflects human hearing, which is most sensitive at 2,000 Hz and decreasingly sensitive below and above 2,000 Hz. Figure 6.11.1-1 (page 142) illustrates A-weighted sound levels of common sounds.

## 6.11.2 Noise at JQF

An assessment of airport noise establishes a baseline of existing and future noise impacts relative to the proposed airport development (expressed in day-night average sound level [DNL]). This analysis identifies potential increases in noise levels in the area surrounding the airport. Two sets of noise contours were developed for this analysis including the existing 2018 baseline case and the 2028 contours for the proposed airport development.

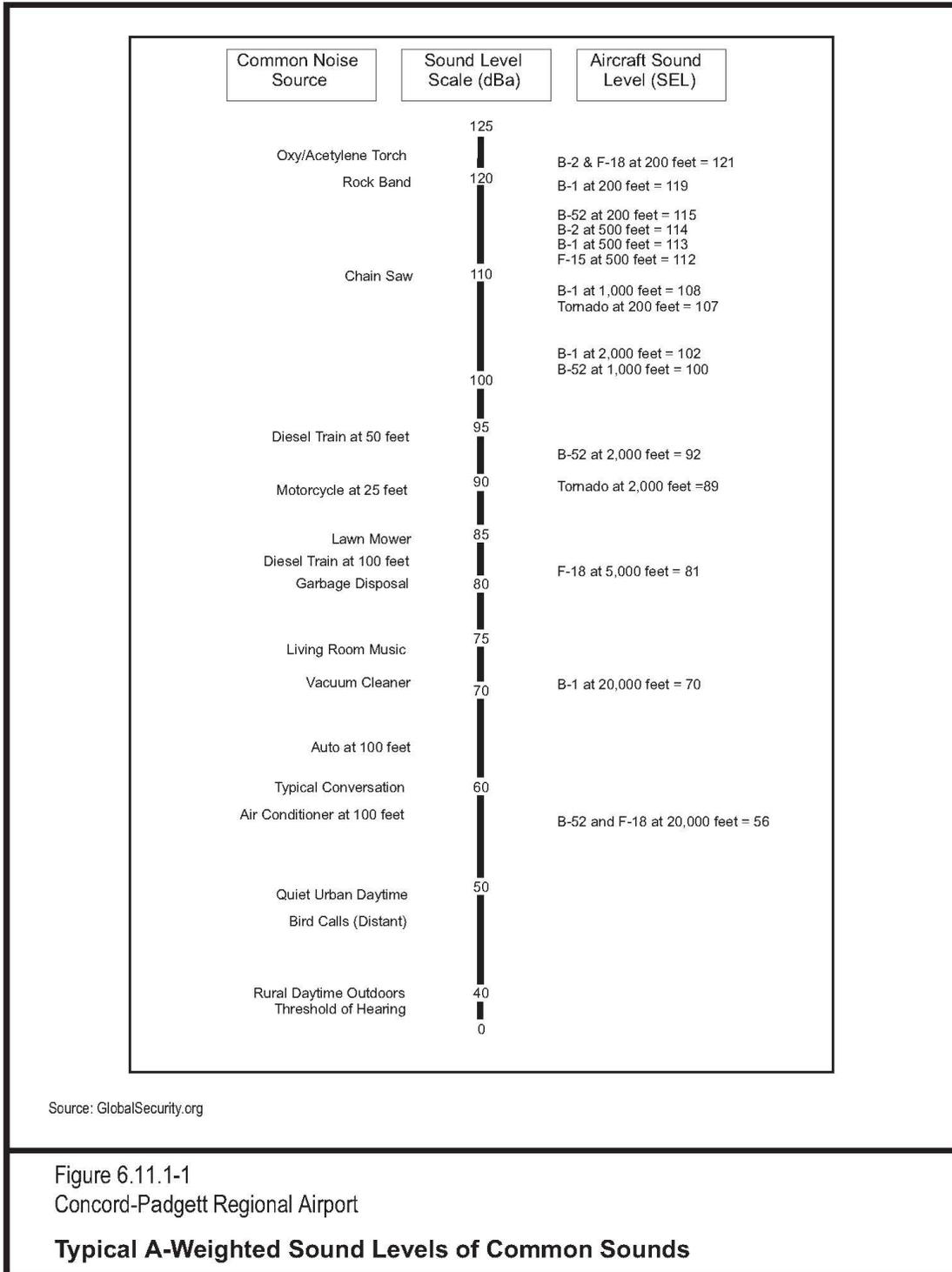
For the noise analysis, the FAA computer-generated Aviation Environmental Design Tool (AEDT) version 2c, SP2 was used to evaluate aircraft noise at the Concord-Padgett Regional Airport based on existing and projected 2028 activity levels, from which Noise Exposure Maps (NEM) were developed. Measured in decibels, the 65 DNL ambient noise contour is compatible with surrounding airport land uses. The DNL is determined from a cumulative exposure of sound (time and level), measured in decibels, and averaged over the span of one year. Noise sensitive areas include residential areas within the 65 DNL and above, public facilities including schools, hospitals, churches, and recreational areas as listed in FAR Part 150. The nearest residences to the Airport are located along Misty Woods Lane, Willow Court, Altacrest Drive, and Sundance Drive, approximately 500 feet west of JQF property.

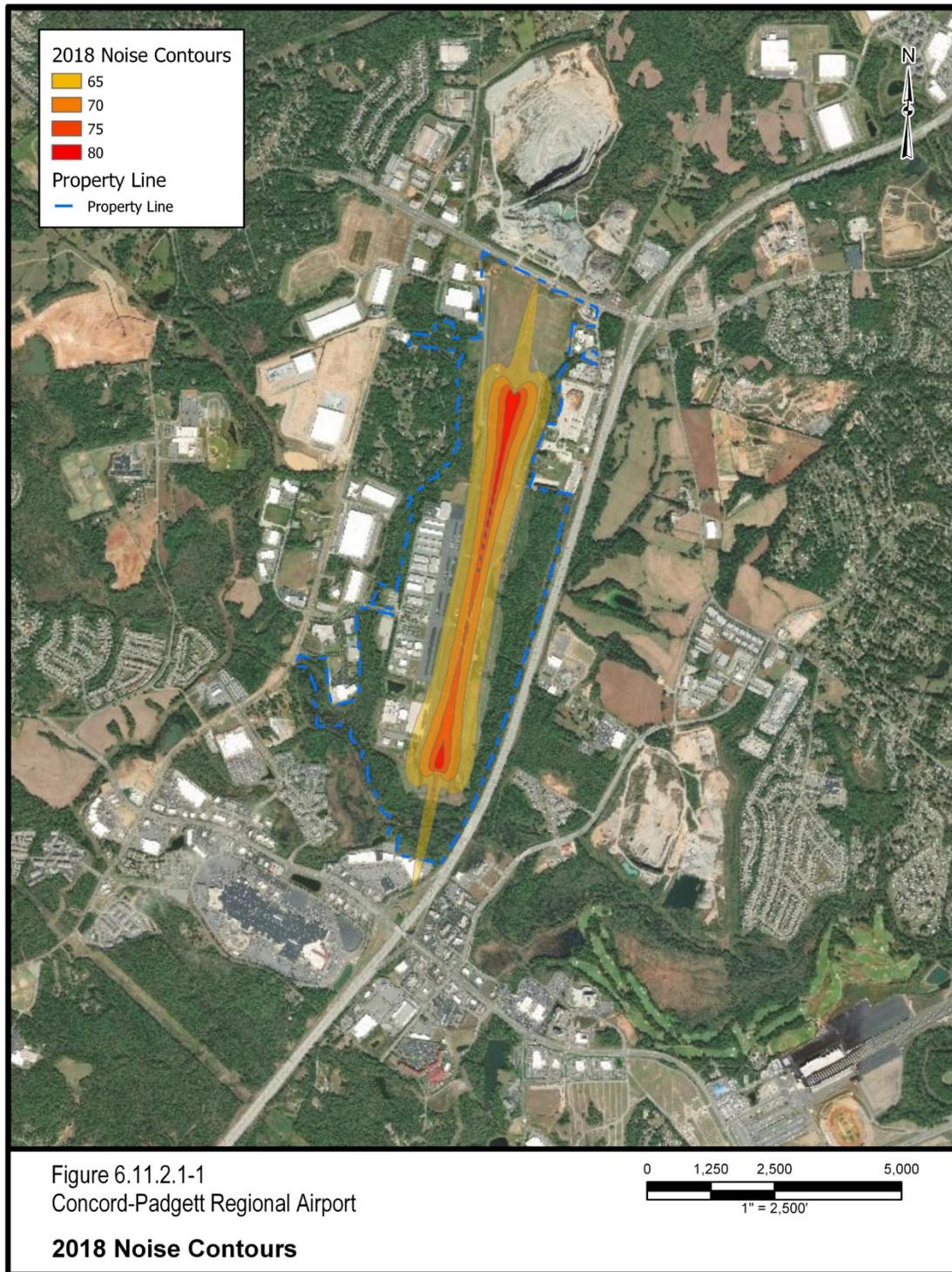
### **6.11.2.1 Existing (2018) Noise Exposure Map**

The existing condition (2018) noise exposure map encompasses a total of 230 acres within the 65 DNL contour, which is centered on the runway and located almost entirely on Airport property (1.6 acres off-airport). The highest recorded DNL resulting from the 2018 NEM is approximately 85 decibels, which results from takeoff thrust applied as it pools near the runway ends (Figure 6.11.2.1-1, page 143). No existing public or private structures or areas of public ground access experience noise levels at or above the 65 dB DNL. This 2018 NEM serves as a baseline for comparing the existing with the future noise exposure impact. The Airport should strive to limit impacts upon the surrounding community when able through outreach programs and noise abatement procedures.

### **6.11.2.2 Future (2028) Noise Exposure Map**

Figure 6.11.2.1-1 (page 141) illustrates the existing (2018) noise contours and Figure 6.11.2.2-1 (page 144) illustrates the future (2028) noise contours. The 65, 70, 75, and 80 decibel unit contours are depicted on these exhibits.





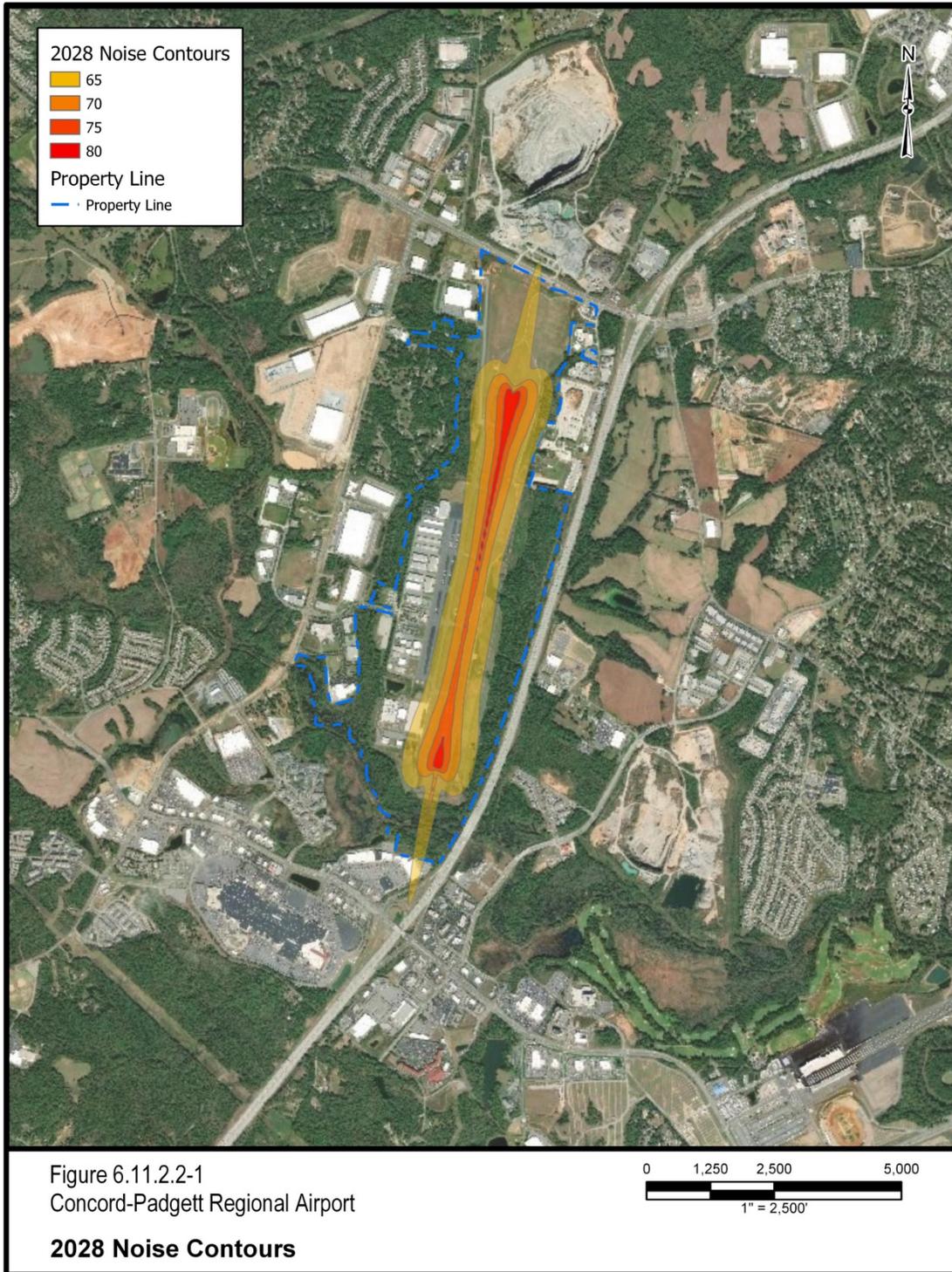


Table 6.11.2.2-1 lists the aircraft selected to represent the operations at JQF. These aircraft and their associated noise signatures are built in to AEDT. The annual operations levels for 2018 and 2028 from the airport forecasts were entered into the program (Table 6.11.2.2-2, page 146).

<b>AEDT Aircraft Designation</b>	<b>Aircraft Type</b>	<b>Equivalent AEDT Aircraft</b>	<b>Aircraft Category</b>
GASEPF, GASEPV	2 to 4 Seat Fixed and Variable-Speed Propeller	Cessna 172 Cessna 182 Cessna 206 Cirrus SR22 Piper PA-28 Cherokee Beechcraft G36 Bonanza	Small Single-Engine Propeller
BEC58P	6 to 8 Seat Variable-Speed Propeller	Piper PA-23 Apache Piper PA-34 Seneca Piper PA-44 Seminole Piper Aerostar	Small Twin-Propeller
DHC6	4 to 8 Seat Turbine Propeller	Beechcraft King Air 200	Small-Cabin Turbopropeller
CNA55B, CL600	8 to 19 Seat Twin-Engine Turbine	Cessna 550 Citation II Bombardier Challenger 600	Medium-Cabin Business Jet
737800, A320, MD80	143 To 160 Seat Twin-Engine Turbine	Boeing 737-800 Airbus A320-200 McDonnell Douglas MD-80	Single-Aisle Airliner
B206L	4 to 6 Seat Turbine Helicopter	Bell 206 Jet Ranger	Light Turbine Helicopter
Source: Federal Aviation Administration, "Aviation Environmental Design Tool (AEDT) Version 2c," released on March 13, 2017.			

Implementation of the Proposed Action will expand the airport noise impact from 160 to roughly 225 acres, a 41 percent increase in the 65 dB DNL noise contour coverage area as shown in Table 6.11.2.2-3 (page 149).

The 2028 proposed development noise exposure map encompasses a total of 254 acres as shown in Figure 6.11.2.2-1 (page 144). The future 65 dB DNL does not extend over any residences or noise sensitive areas. No planned public or private structures or areas of public ground access would experience noise levels at or above 65 DNL. Noise levels higher than 65 dB DNL are not expected to contribute to substantial noise impacts based on the projected frequency of additional aircraft using the Airport.

**Table 6.11.2.2-2  
AEDT Operations  
Concord-Padgett Regional Airport**

		Runway 02-20 Daily Operations					
		2018			2028		
Operations Breakdown	Percentage	Operations			Operations		
Single-Engine Piston (SEP)	30%	14,440			15,331		
Multi-Engine Piston (MEP)	7%	4,395			4,666		
Turbo Prop (TP)	32%	14,440			15,331		
Turbo Jet (TJ)	21%	28,253			29,995		
Rotorcraft	10%	1,256			1,333		
<b>Total</b>		<b>62,784</b>			<b>66,656</b>		
<b>SEP Operations</b>		14,440	<b>Aircraft</b>		15,331	<b>Aircraft</b>	
<b>Runway 02</b>		5,054	<b>GASEPV</b>	<b>GASEPF</b>	5,366	<b>GASEPV</b>	<b>GASEPF</b>
Day Approach		2,274	3.12	3.12	2,415	3.31	3.31
Night Approach		253	0.35	0.35	268	0.37	0.37
Day Departure		2,274	3.12	3.12	2,415	3.31	3.31
Night Departure		253	0.35	0.35	268	0.37	0.37
<b>Runway 20</b>		9,386			9,965		
Day Approach		4,224	5.79	5.79	4,484	6.14	6.14
Night Approach		469	0.64	0.64	498	0.68	0.68
Day Departure		4,224	5.79	5.79	4,484	6.14	6.14
Night Departure		469	0.64	0.64	498	0.68	0.68
<b>MEP Operations</b>		4,395	<b>Aircraft</b>		4,666	<b>Aircraft</b>	
<b>Runway 02</b>		1,538	<b>BEC58P</b>		1,633	<b>BEC58P</b>	
Day Approach		692	1.90		735	2.01	
Night Approach		77	0.21		82	0.22	
Day Departure		692	1.90		735	2.01	
Night Departure		77	0.21		82	0.22	
<b>Runway 20</b>		2,857			3,033		
Day Approach		1,286	3.52		1,365	3.74	
Night Approach		143	0.39		152	0.42	

**Table 6.11.2.2-2  
AEDT Operations  
Concord-Padgett Regional Airport**

		Runway 02-20 Daily Operations					
		2018			2028		
Day Departure		1,286	3.52		1,365	3.74	
Night Departure		143	0.39		152	0.42	
<b>TP Operations</b>		14,440	<b>Aircraft</b>		15,331	<b>Aircraft</b>	
<b>Runway 02</b>		5,054	<b>DHC6</b>		5,366	<b>DHC6</b>	
Day Approach		2,274	6.23		2,415	6.62	
Night Approach		253	0.69		268	0.74	
Day Departure		2,274	6.23		2,415	6.62	
Night Departure		253	0.69		268	0.74	
<b>Runway 20</b>		9,386			9,965		
Day Approach		4,224	11.57		4,484	12.29	
Night Approach		469	1.29		498	1.37	
Day Departure		4,224	11.57		4,484	12.29	
Night Departure		469	1.29		498	1.37	
<b>GA Jet Operations</b>		26,850	<b>Aircraft</b>		27,985	<b>Aircraft</b>	
<b>Runway 02</b>		9,398	<b>CNA55B</b>	<b>CL600</b>	9,795	<b>CNA55B</b>	<b>CL600</b>
Day Approach		4,229	5.79	5.79	4,408	6.04	6.04
Night Approach		470	0.64	0.64	490	0.67	0.67
Day Departure		4,229	5.79	5.79	4,408	6.04	6.04
Night Departure		470	0.64	0.64	490	0.67	0.67
<b>Runway 20</b>		17,453			18,190		
Day Approach		7,854	10.76	10.76	8,186	11.21	11.21
Night Approach		873	1.20	1.20	910	1.25	1.25
Day Departure		7,854	10.76	10.76	8,186	11.21	11.21
Night Departure		873	1.20	1.20	910	1.25	1.25
<b>Commercial Jet Operations</b>		1,403	<b>Aircraft</b>		2,020	<b>Aircraft</b>	

**Table 6.11.2.2-2  
AEDT Operations  
Concord-Padgett Regional Airport**

		Runway 02-20 Daily Operations							
		2018				2028			
Runway 02		491	MD80	737800	A320-211	704	MD80	737800	A320-211
Day Approach		221	0.03	0.06	0.51	317	0.05	0.09	0.73
Night Approach		25	0.00	0.01	0.06	35	0.01	0.01	0.08
Day Departure		221	0.03	0.06	0.51	317	0.05	0.09	0.73
Night Departure		25	0.00	0.01	0.06	35	0.01	0.01	0.08
<b>Runway 20</b>		912				1,307			
Day Approach		410	0.06	0.11	0.95	588	0.09	0.16	1.36
Night Approach		46	0.01	0.01	0.11	65	0.01	0.02	0.15
Day Departure		410	0.06	0.11	0.95	588	0.09	0.16	1.36
Night Departure		46	0.01	0.01	0.11	65	0.01	0.02	0.15

Source: Federal Aviation Administration, "Aviation Environmental Design Tool (AEDT) Version 2c," released on March 13, 2017.  
Talbert, Bright & Ellington Inc., July 2018.

Table 6.11.2.2-3 65 dB DNL Noise Contour Areas Concord-Padgett Regional Airport		
Year	65 dB DNL Coverage	
	Total	Off-Airport
2018 Existing Conditions	230 acres	1.6 acres
2028 Proposed Action	254 acres	4.16 acres
Source: Talbert, Bright & Ellington, Inc., July 2018		

Prior to development of the proposed projects outlined on the ALP the noise contours should be updated if it is determined that there would be a significant increase in operations.

## 6.12 Socioeconomic Impacts, Environmental Justice, and Children’s Health and Safety Risks

### 6.12.1 Socioeconomic Impacts

Cabarrus County is part of the 16-county Charlotte region. The region's growth occurred faster in the 1990s than in the previous 20 years and shifted from the center city and county, Charlotte-Mecklenburg, to the surrounding communities including Cabarrus County. Cabarrus County's growth can be directly linked to Charlotte and I-85, which is the main transportation corridor throughout the region. With the I-485 beltway around Charlotte is completed, it has offered increased access to communities in Cabarrus County and provide a more accommodating route to existing highway facilities.

The population of Cabarrus County was 178,517 in 2010 according to the US Census Bureau. The population of Cabarrus County increased by 15.18 percent between 1980 and 1990 and 32.47 percent between 1990 and 2000. Current projections by the North Carolina State Demographics anticipate that Cabarrus County will increase its population an additional 16.2 percent by 2020. From 2020 to 2030, it is expected to increase an additional 14.4 percent, as illustrated in the Table 6.12.1-1 (page 150).

Table 6.12.1-2 (page 151) illustrates the current demographic characteristics for Cabarrus County. Table 6.12.1-3 (page 150) illustrates the major employers for Cabarrus County.

**Table 6.12.1-1  
Population Projections  
Concord-Padgett Regional Airport**

Year	Cabarrus County		North Carolina	
	Population	Percent Change	Population	Percent Change
1970	74,629		5,084,411	
1980	85,895	15.10%	5,880,095	15.65%
1990	98,935	15.18%	6,632,448	12.79%
2000	131,063	32.47%	8,046,813	21.32%
2010	178,517	36.21%	9,574,477	18.98%
2015	192,434	7.80%	10,054,192	5.01%
2020	207,359	7.76%	10,558,749	5.02%
2025	222,284	7.20%	11,057,914	4.73%
2030	237,210	6.71%	11,558,205	4.52%

Source: North Carolina State Demographics, "Population Overview," <<http://demog.state.nc.us>>, accessed November 21, 2017.

**Table 6.12.1-3  
Major Employers  
Concord-Padgett Regional Airport**

Company	Employees
Carolinas HealthCare System Northeast	4,500
S&D Coffee and Tea	1,100
Amazon	1,000
Speedway Motorsports Inc.	1,000
Shoe Show	750
ACN	600
Corning, Inc.	600
Hendrick Motorsports	600
Great Wolf Lodge & Resort	500
Sysco	500
DNP IMS	350
Perdue Farms	350
Roush Fenway Racing	330
Legrand/Pass & Seymour	300
Stanley Black & Decker	300

List excludes governmental jobs and school system jobs  
Source: Cabarrus County Economic Development Corporation, "Major Employers," Updated August 2017, <<http://cabarrusedc.com/>>, accessed November 21, 2017.

**Table 6.12.1-2  
General Demographic Characteristics (2010)  
Concord-Padgett Regional Airport**

Subject	City of Concord	Cabarrus County	North Carolina	United States
<b>Population</b>				
Total population	79,066	178,011	9,535,483	308,745,538
<b>Sex and Age</b>				
Male	38,116	86,944	4,645,492	151,781,326
Female	40,950	91,067	4,889,991	156,964,212
Under 5 years	6,323	13,014	632,040	20,201,362
5 to 14 years	12,566	27,607	1,267,049	41,025,851
15 to 19 years	5,375	12,341	659,591	22,040,343
20 to 24 years	4,232	9,083	661,573	21,585,999
25 to 34 years	11,172	22,598	1,246,593	41,063,948
35 to 44 years	12,823	28,442	1,327,151	41,070,606
45 to 54 years	10,697	25,978	1,368,646	45,006,716
55 to 59 years	3,981	10,073	600,722	19,664,805
60 to 64 years	3,489	8,790	538,039	16,817,924
65 to 74 years	4,587	11,396	697,567	21,713,429
75 to 84 years	2,637	6,182	389,051	13,061,122
85 years and over	1,184	2,507	147,461	5,493,433
Median age (years)	34.9	36.7	37.4	37.2
18 years and over	56,608	129,230	7,253,848	234,564,071
Male	26,681	61,758	3,478,189	113,836,190
Female	29,927	67,472	3,775,659	120,727,881
Average household size	2.68	2.69	2.48	2.58
Average family size	3.19	3.15	3.01	3.14
<b>Housing</b>				
Total housing units	32,130	71,937	4,327,528	131,704,730
Occupied housing units	29,137	65,666	3,745,155	116,716,292
Vacant housing units	2,993	6,271	582,373	14,988,438
For seasonal, recreational, or occasional use	159	319	191,508	4,649,298
Homeowner vacancy rate (percent)	2.8	2.5	2.8	2.4
Rental vacancy rate (percent)	11.8	12.1	11.1	9.2
Occupied housing units	29,137	65,666	3,745,155	116,716,292
Owner-occupied housing units	19,745	48,381	2,497,900	75,986,074
Renter-occupied housing units	9,392	17,285	1,247,255	40,730,218
Average household size of owner-occupied unit	2.74	2.71	2.52	2.65
Average household size of renter-occupied unit	2.57	2.62	2.40	2.44

Source: United States Census Bureau, American FactFinder (2010) <<http://factfinder2.census.gov/>>, accessed November 21, 2017.

## 6.12.2 Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*,<sup>43</sup> states that to the greatest extent practicable and permitted by law, each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.

Disproportionate can mean that an impact occurs predominantly in environmental justice populations (those populations with percentages of low-income and/or minority individuals above the percentages for the county in which the individuals live) or that the impact is more severe in these populations than non-environmental justice populations. The terms minority persons, minority population, low-income persons, and low-income populations, as defined, are useful in understanding environmental justice.

- **Minority populations** are
  - Origins of any of the black racial groups from Africa
  - Hispanic origins such as Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race
  - Asian origins such as any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent
  - America Indian and Alaskan Native people such as those with origins in any of the original people of North America and who maintain cultural identification through tribal affiliation or community recognition
  - Native Hawaiian or Other Pacific Islander people such as those having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands
- **Minority persons** are any readily identifiable groups or minority populations who live in close geographic proximity and, if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by a proposed activity.
- **Low-Income Populations** are any readily identifiable community or group whose median household income is at or below the U.S. Department of Health and Human Services (USDHHS) poverty guidelines (Table 6.12.2-1, page 153). The U.S. Census Bureau Office of Statistics also provides census data used in calculating low-income populations.

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<sup>43</sup>Federal Register, Vol. 59, No. 32, February 16, 1994, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," <<http://www.epa.gov/fedreg/eo/eo12898.pdf>>, accessed November 21, 2017.

- **Low-Income Persons** are persons whose household income is at or below the USDHHS poverty guidelines outlined in Table 6.12.2-1.

**Table 6.12.2-1  
USDHHS Poverty Guidelines  
Concord-Padgett Regional Airport**

Size of Family Unit	Weighted Average Thresholds
One person	\$12,060
Two people	\$16,240
Three people	\$20,420
Four people	\$24,600
Five people	\$28,780
Six people	\$32,960
Seven people	\$37,140
Eight people	\$41,320
Each Additional Person	+\$4,180

Source: United States Department of Health & Human Services Office of the Assistant Secretary for Planning and Evaluation, "HHS Poverty Guidelines for 2017," <<https://aspe.hhs.gov/poverty-guidelines>>, accessed November 21, 2017.

A block group analysis was conducted to identify the number of minority and low-income areas within the vicinity of JQF.

Total minority population in the study area (Census Tract 413, Block Group 2 and Census Tract 426, Block Groups 3 and 4) in 2000 was estimated at approximately 10.8 percent (Table 6.12.2-2). This percentage is 17.1 percent lower than North Carolina (27.9 percent).

**Table 6.12.2-2  
US Census Minority Populations by Individuals  
Concord-Padgett Regional Airport**

	Total Population	Total Minority Population	Percent Minority Population
United States	281,421,906	70,068,181	24.9%
North Carolina	8,049,313	2,247,148	27.9%
Cabarrus County	131,063	21,936	16.7%
Evaluation Area*	11,896	1,281	10.8%

\*Census Tract 413, Block Group 2 and Census Tract 426, Block Groups 3 and 4.  
Source: U.S. Census Bureau, American FactFinder (2000)  
<[http://factfinder.census.gov/servlet/DatasetMainPageServlet?\\_program=DEC&\\_ds\\_name=DEC\\_2000\\_SLDS&\\_submenuid=datasets\\_3&\\_lang=en](http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=DEC&_ds_name=DEC_2000_SLDS&_submenuid=datasets_3&_lang=en)>, accessed November 21, 2017.

The total percentage of people in the study area (Census Tract 413, Block Group 2 and Census Tract 426, Block Groups 3 and 4) classified as living below the poverty level in 2000 was approximately 4.3 percent (Table 6.12.2-3). This rate is 8.0 percent lower than North Carolina (12.3 percent) as a whole.

**Table 6.12.2-3  
US Census Low-Income Populations by Individuals  
Concord-Padgett Regional Airport**

	Total Population	Total Low-Income Population	Percent Low-Income Population
United States	281,421,906	33,899,812	12.4%
North Carolina	8,049,313	958,667	12.3%
Cabarrus County	131,063	9,108	7.1%
Evaluation Area*	11,896	403	4.3%

\*Census Tract 413, Block Group 2 and Census Tract 426, Block Groups 3 and 4  
Source: US Census Bureau, American FactFinder (2000)  
<[http://factfinder.census.gov/servlet/DatasetMainPageServlet?\\_program=DEC&\\_ds\\_name=DEC\\_2000\\_SLDS&\\_submenuId=datasets\\_3&\\_lang=en](http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=DEC&_ds_name=DEC_2000_SLDS&_submenuId=datasets_3&_lang=en)>, accessed November 21, 2017.

As a result, the minority and/or low-income populations that reside within the environmental justice evaluation area do not exceed the thresholds for the state of North Carolina.

Prior to development of the proposed projects outlined on the ALP or additional property to be acquired, an analysis will be performed to determine whether there are environmental justice impacts.

### 6.12.3 Children’s Health and Safety Risks

Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks,<sup>44</sup> states that each federal agency shall:

- Make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children
- Ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks

<sup>44</sup>Federal Register, Vol. 62, No. 78, Pg. 19885, April 23, 1997, “Executive Order 13045 of April 21, 1997, Protection of Children from Environmental Health Risks and Safety Risks,” <<http://www.gpo.gov/>>, accessed November 15, 2017.

Prior to development of the proposed projects outlined on the ALP or additional property to be acquired, an analysis will be performed to determine whether there will be impacts to the health and safety of children.

## 6.13 Visual Effects

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### 6.13.1 Light Emissions

Currently there are two main sources of light emissions from JQF:

- A rotating beacon with alternating white and green lights located on top of the terminal building
- HIRLs and a MALSR on Runway 20

Prior to development of the proposed projects outlined on the ALP on currently undeveloped areas within the JQF property boundary or acquired property, a light emissions impact analysis will be performed to determine the extent of potential impacts.

### 6.13.2 Visual Impacts

Visual impacts are identified by examining the visual view-shed of the airport and its surrounding environs. The visual viewshed, which considers the entire landscape, is comprised of two main aspects: views to and views from the proposed projects.

Prior to development of the proposed projects outlined on the ALP on currently undeveloped areas within the JQF property boundary or acquired property, a visual impact analysis will be performed to determine the extent of potential visual impacts.

## 6.14 Water Resources

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### 6.14.1 Wetlands

Executive Order 11990, *Protection of Wetlands*,<sup>45</sup> requires federally supported projects to preserve wetlands and avoid and minimize wetland impacts to the maximum extent practicable. In addition, Section 404 of the Clean Water Act requires regulation for the fill or discharge of materials in to waters

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<sup>45</sup>Federal Register, Vol. 42, Pg. 26961, May 24, 1977, “Protection of Wetlands,”  
<<https://propertydisposal.gsa.gov/RedinetDocs/Env/EO11990.pdf>>, accessed November 21, 2017.

of the United States. Water bodies, such as rivers, lakes, and streams, as well as wetlands, are subject to jurisdictional consideration under the Section 404 program.

Although the principal administrative agency of the Clean Water Act is the USEPA, the U.S. Army Corps of Engineers (USACE) has the major responsibility for implementing, permitting, and enforcing provisions of the Clean Water Act. The USACE regulatory program is defined in 33 CFR Parts 320-330.<sup>46</sup>

As of June 5, 2007, the USEPA and USACE have issued guidance concerning coordination on jurisdictional area delineations under the Clean Water Act Section 404 in light of Solid Waste Agency of Northern Cook County (SWANCC) and Rapanos Supreme Court Decisions. The new regulatory guidance (RGL 07-01)<sup>47</sup> is implemented by USACE field representatives.<sup>48, 49</sup>

The currently accepted methods of wetland determination described in the *1987 United States Army Corps of Engineers Manual for Identifying and Delineating Wetland Areas* will be utilized. The manual states that under normal circumstances, an area must demonstrate the presence of three components to be declared a jurisdictional wetland: 1) hydrophytic vegetation, 2) hydric soils, and 3) wetland hydrology. In accordance with the three-component approach to identifying wetland areas, soils, hydrology, and vegetation will be simultaneously characterized at each observation point (sample location). The collected field data will then be utilized to make a routine wetland determination. Upland/wetland boundaries will be determined by proceeding away from the wetlands toward uplands and noting any changes in soil, vegetation, and hydrology. The boundaries of any wetland areas identified within the proposed projects outlined on the ALP will be flagged at the locations where hydrophytic vegetation and/or hydric soils give way to non-hydrophytic vegetation and/or non-hydric soils. When the three components test positive, a wetland designation will be assigned. The specific testing conducted at each sample location will be as follows:

- **Vegetation** – vegetation in each stratum will be examined at each sample location. Herbaceous vegetation, saplings, and shrubs will be examined within a 5-foot radius. Trees and woody vines will be examined within a 30-foot radius. Dominant plant species will be identified in each stratum. The wetland indicator status for each dominant plant was recorded using the USFWS *National List of Plant Species that Occur in Wetlands* (1996). Where greater than

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<sup>46</sup>Code of Federal Regulations, “Title 33 Navigation and Navigable Waters, Parts 320-330, US Army Corps of Engineers Regulatory Program Regulations,” <<http://www.usace.army.mil/cw/cecwo/reg/sadmin3.htm>>, accessed November 21, 2017.

<sup>47</sup>Clean Water Act Jurisdiction following the US Supreme Court’s Decision in Rapanos vs. United States and Carabell vs. United States.

<sup>48</sup>U.S. Army Corps of Engineers, “Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region, ERDC/EL TR-08-30, October 2008,” <<http://el.erdc.usace.army.mil/elpubs/pdf/trel08-30.pdf>>, accessed November 21, 2017.

<sup>49</sup>U.S. Army Corps of Engineers, “DRAFT Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region, Draft for Peer Review and Field Testing 6-25-2009,” <[http://www.usace.army.mil/CECW/Documents/cecwo/reg/EMP\\_Peer\\_Rev.pdf](http://www.usace.army.mil/CECW/Documents/cecwo/reg/EMP_Peer_Rev.pdf)>, accessed November 21, 2017.

50 percent of the dominant species will be identified as OBL, FAC (excluding FAC-), or FACW (including FACW- and FACW+), the sample location will be considered to have hydrophytic vegetation.

- **Soils** – excavations with a Dutch auger will be made by hand to a depth of approximately 16 inches at each sample location. Soil below the “A” horizon will be examined at a depth of 12 inches to 16 inches and compared to the following hydric soil indicators:
  - gleying (gray coloring)
  - matrix chroma of two or fewer in both mottled and unmottled mineral soils
  - high organic content in the upper layers
  - organic streaking (sandy soils)
  - iron and manganese concretions

Soil colors will be evaluated using Munsell Soil Color charts. Additional soil characteristics, including texture, soil series, and drainage class, will also be examined at each sample location.

- **Hydrology** – each sample location will be examined for indicators of wetland hydrology, especially inundation; soil saturation of the upper 16 inches; drift lines; drainage patterns; watermarks; and sediment deposits.

Prior to development of the proposed projects outlined on the ALP on currently undeveloped areas within the JQF property or additional property to be acquired, compliance with the Clean Water Act will be necessary, as well as coordination with appropriate federal and state agencies regarding potential wetland impacts.

#### **6.14.1.1 Conservation Easement**

In 1999, 22.8 acres of Airport property was placed under a conservation easement to mitigate unavoidable stream and wetland impacts detailed in USACE Permit Number 19980189 to fulfill certain obligations for the Concord Mills development located to the south of JQF. The purpose of the conservation easement is to preserve and protect the natural character of the property under the easement in perpetuity (Figure 6.14.1.1-1, page 158).

### **6.14.2 Floodplains**

As outlined in Executive Order 11988, *Floodplain Management*,<sup>50</sup> agencies are required to reduce the risk of flood loss; minimize the impact of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by the floodplain.

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<sup>50</sup>Federal Register, Vol. 42, Pg. 26951, May 24, 1977, “Floodplain Management,”  
<<https://propertydisposal.gsa.gov/RedinetDocs/Env/EO11988.pdf>>, accessed November 21, 2017.



Federal regulations permit development in the 100-year floodplain if it is demonstrated through hydraulic analysis that the development would meet the requirements set forth by the Federal Emergency Management Agency (FEMA) for the National Flood Insurance Program. These requirements allow encroachment in the floodplain as long as the base flood elevation does not increase by more than one foot. When a regulatory floodway has been defined for a waterway, the encroachment should remain outside the floodway limits.

Review of the Cabarrus County floodplain maps provided by the FEMA Map Service Center<sup>51,52,53,54</sup> indicates that the 100-year floodplain would not encroach within the development area of the proposed projects outlined on the ALP (Figure 6.14.2-1, page 160). The majority of JQF is located within an area zoned X, which corresponds to areas determined to be outside the 0.2 percent annual chance floodplain and outside future conditions 1 percent annual chance floodplain.

Prior to development of the proposed projects outlined on the ALP, should proposed projects be located in the vicinity of the unnamed tributaries to the Rocky River, a floodplain analysis is recommended to determine whether there would be an impact.

### 6.14.3 Surface Waters

Cabarrus County is located in the Yadkin-Pee Dee River basin. From its headwaters near Blowing Rock, the Yadkin River flows east and then south across North Carolina's densely populated midsection. It flows 203 miles passing farmland; draining the urban landscapes of Winston-Salem, Statesville, Lexington, and Salisbury; and passes through seven man-made reservoirs before its name changes to the Pee Dee River below Lake Tillery. The Pee Dee courses another 230 miles to the Atlantic Ocean, leaving North Carolina near the community of McFarlan and ending its journey at South Carolina's Winyah Bay.

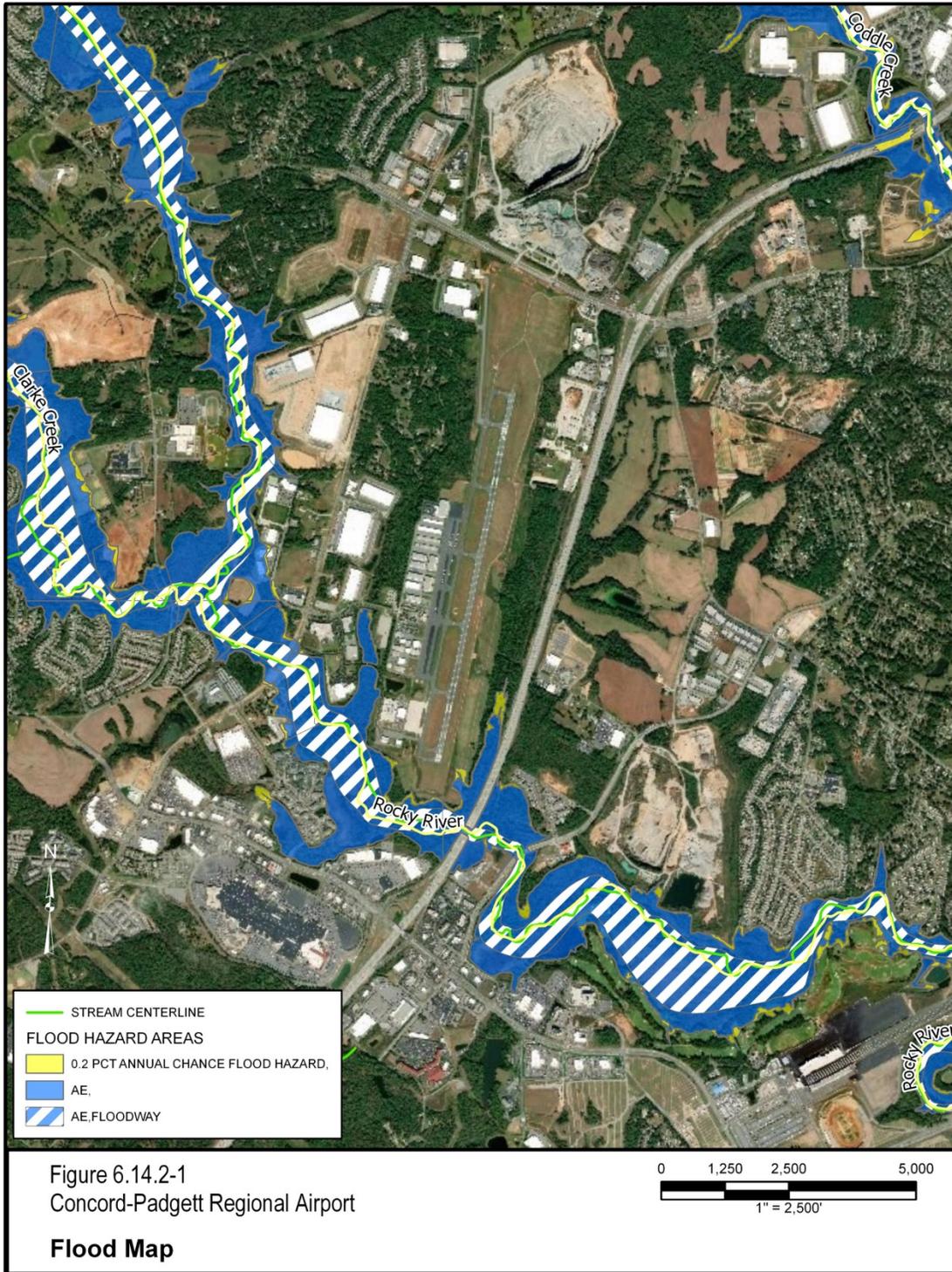
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<sup>51</sup>Federal Emergency Management Agency Map Service Center, "FEMA issued Flood Maps –Flood Insurance Rate Map North Carolina Panel 4589, Map Number 3710458900K, Map Revised March 2, 2009," <<http://www.ncsparta.net/fmis/Download.aspx>>, accessed November 21, 2017.

<sup>52</sup>Federal Emergency Management Agency Map Service Center, "FEMA issued Flood Maps –Flood Insurance Rate Map North Carolina Panel 4599, Map Number 3710459900J, Map Revised November 5, 2008," <<http://www.ncsparta.net/fmis/Download.aspx>>, accessed November 21, 2017.

<sup>53</sup>Federal Emergency Management Agency Map Service Center, "FEMA issued Flood Maps –Flood Insurance Rate Map North Carolina Panel 4680, Map Number 3710468000K, Map Revised November 5, 2008," <<http://www.ncsparta.net/fmis/Download.aspx>>, accessed November 21, 2017.

<sup>54</sup>Federal Emergency Management Agency Map Service Center, "FEMA issued Flood Maps –Flood Insurance Rate Map North Carolina Panel 4690, Map Number 3710469000K, Map Revised November 5, 2008," <<http://www.ncsparta.net/fmis/Download.aspx>>, accessed November 21, 2017.



JQF is located in Rocky River Watershed Subbasin Hydrologic Unit Code (HUC) 03040105 (Figure 6.14.3-1, page 162),<sup>55</sup> which is the largest tributary of the Yadkin-Pee Dee River and flows for almost 100 miles from its headwaters near Mooresville in Iredell County to its confluence with the Pee Dee River. Coddle Creek is a major tributary in the northwestern part of the watershed, while Irish Buffalo Creek, Goose Creek, and Crooked Creek drain the central portion of the watershed. This region contains many rapidly growing urban areas including Mooresville, Concord, Cornelius, Davidson, Huntersville, Kannapolis, and eastern Mecklenburg County. There are 56 permitted dischargers in the subbasin:

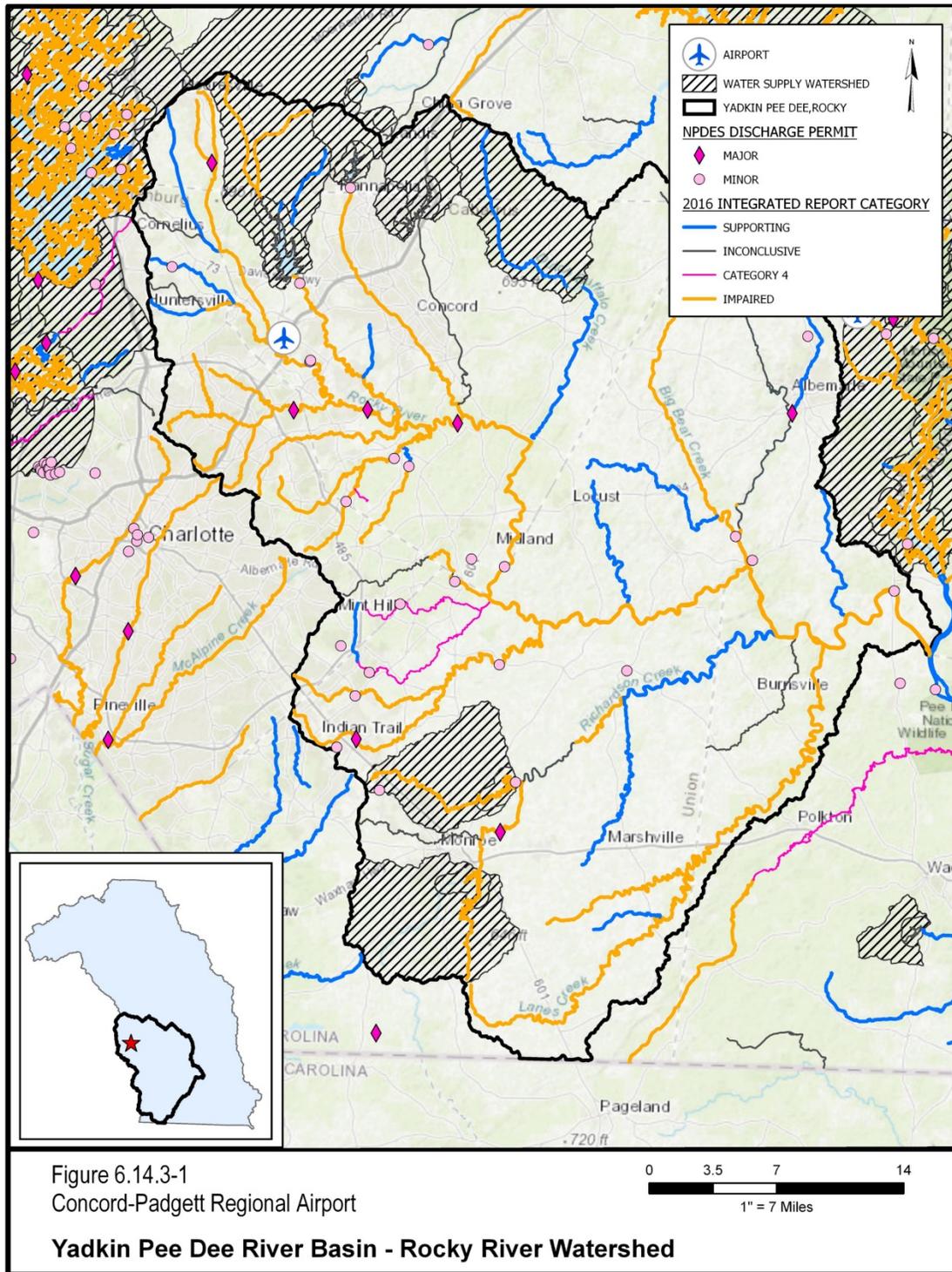
- NPDES Wastewater Treatment Plant (WWTP):
  - Major 8
  - Minor 45
  - NPDES Nondischarge: 24
- NPDES Stormwater:
  - General 141
  - Individual 9
  - Phase II 10

There are no waters classified as high-quality waters, outstanding resource waters, or waters designated as water supply watersheds (WS-I or WS-II) located within the study area for the JQF ALP, and therefore, no impacts to sensitive water resources are expected. However, the Rocky River that borders JQF on the south, is classified as Class C waters, which are used for secondary recreation, fishing, wildlife, fish and aquatic life propagation and survival, agriculture, and other uses suitable for Class C. Secondary recreation includes wading, boating, and other uses involving human body contact with water where such activities take place in an infrequent, unorganized, or incidental manner. There is one monitoring Proposed Action project area on Rocky River as outlined in Table 6.14.3-1 (page 163).

Prior to development of the proposed projects outlined on the ALP on currently undeveloped areas within the JQF property or additional property to be acquired, compliance with the Clean Water Act will be necessary, as well as coordination with appropriate federal and state agencies regarding potential water quality impacts.

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<sup>55</sup>North Carolina Department of Environment and Natural Resources Division of Water Quality Water Quality Section Planning Branch, “Yadkin-Pee Dee River Basin Plan Rocky River HUC 03040105 2008,” July 2008, <<http://h2o.enr.state.nc.us/basinwide/Neuse/2008/documents/RockyR.03040105.pdf>>, accessed November 21, 2017.



**Table 6.14.3-1  
Rocky River Water Quality Monitoring Area  
Concord-Padgett Regional Airport**

Description/ Collection Year	Monitoring Site	
	13-17a	
	1998	2006
NCDEQ-DWQ Subbasin	03040105	
Location	From source to mouth of Reedy Creek	
Classification	C	
Miles (FW)	34.1	
Potential Stressors	Fecal Coliform Bacteria	Turbidity
Potential Sources	MS4 NPDES	Construction, MS4 NPDES, stormwater runoff
<b>Use Support Category</b>		
Aquatic Life		X*, ***, ****
Recreation	X**	
Water Supply		
<b>Use Support Rating</b>		
Impaired	X**	X***, ****
Supporting		X*
<b>Reason for Rating</b>		
Biological Criteria Exceeded		X***
No Criteria Exceeded		X*
Standard Violation	X**	X****
<b>Parameter of Interest</b>		
Ecological/Biological Integrity (Benthos)		X***
Ecological/Biological Integrity (Fish Community)		X*
Fecal Coliform (Recreation)	X**	
Turbidity		X****
*Supporting the assessed use, no criteria exceeded (NCE) for a parameter of interest (POI) in a use support category (USC).		
**Impaired for the assessed USC/POI; there is a standards violation (SV) and an approved total maximum daily load (TMDL) for the POI.		
***Impaired biological integrity with an identified aquatic life standards violation		
****Impaired for the assessed USC/POI in need of TMDL for POI.		
Source: North Carolina Department of Environment and Natural Resources, Planning Branch, Basinwide Planning Program Unit, "Appendix A Use Support Ratings for All Monitored Waterbodies in Rocky River Subbasin HUC- 03040105," July 2008, < <a href="http://h2o.enr.state.nc.us">http://h2o.enr.state.nc.us</a> >, accessed November 21, 2017.		

## 6.14.4 Wild and Scenic Rivers

The Wild and Scenic Rivers Act (PL 90-542, as amended, 16 USC 1271-1287) established the National Wild and Scenic Rivers System and prescribed the methods and standards through which rivers were identified and added to the system. The Act authorizes the Secretaries of the Interior and Agriculture to study areas and submit proposals for addition to the system. It describes procedures and limitations for control of lands in federally administered components of the system and for dealing with

disposition of lands and minerals under federal ownership. Rivers are classified as wild, scenic, or recreational. Definitions of each are presented below:

- **Wild river areas** are rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.
- **Scenic river areas** are rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped but accessible in places by roads.
- **Recreational river areas** are rivers or sections of rivers that are readily accessible by road or railroad, may have some development along their shorelines, and may have undergone some impoundment or diversion in the past.

#### **6.14.4.1 Designated Federal Wild and Scenic Rivers in North Carolina**

There are currently five rivers, or portions thereof, in North Carolina listed as wild and scenic rivers:

- **Chattooga River ((PL 93-279 – May 10, 1974) – 58.7 miles (wild [41.6 miles], scenic [2.5 miles], recreational [14.6 miles])** located in North Carolina, South Carolina, and Georgia; 0.8 miles below Cashiers Lake in North Carolina to the Tugaloo Reservoir. The West Fork from its confluence with the main stem upstream 7.3 miles.
- **Horsepasture River (PL 99-530 – October 26, 1986) – 4.2-mile segment (scenic [3.6 miles], recreational [0.6 miles])**; from Bohaynee Road (NC 281) downstream to Lake Jocassee.
- **Lumber River (Secretarial Designation – September 28, 1998) – 81.0 miles (scenic [60.0 miles], recreational [21.0 miles])**; from State Route 1412/1203 to the Scotland/Robeson County lines at the end of the Maxton Airport Swamp and from Back Swamp to the North/South Carolina border.
- **New River (Secretarial Designation – April 13, 1976) – 26.5-mile segment (scenic)** of the south fork of the New River extends from its confluence with Dog Creek in Ashe County downstream through Ashe and Alleghany Counties to its confluence with the north fork of the New River and from there the main fork of the New River in Ashe and Alleghany counties downstream to the Virginia state line.
- **Wilson Creek (PL 106-261 – August 18, 2000) – 23.3 miles (wild [4.6 miles], scenic [2.9 miles], recreational [15.8 miles])**; from the headwaters below Calloway Peak to the confluence with Johns River.

#### **6.14.4.2 Designated State Natural and Scenic Rivers in North Carolina**

North Carolina enacted the Natural and Scenic Rivers Act of 1971 (North Carolina General Statutes, Chapter 113A: Pollution Control and Environment, Article 3: Natural and Scenic

Rivers System), which *includes retaining the natural and scenic conditions in some of the State's valuable rivers by maintaining them in a free-flowing state and to protect their water quality and adjacent lands by retaining these natural and scenic conditions.* Rivers or portions thereof, protected by this Act include:

- **Horsepasture River** – 4.5-mile segment in Transylvania County extending from Bohaynee Road (NC 281) downstream to Lake Jocassee is classified as a natural river.
- **Linville River** – 13.0-mile segment beginning at the NC 183 bridge over the Linville River is classified as a natural river. The designated segment flows through the federal Linville Gorge Wilderness Area, which is part of the Pisgah National Forest.
- **Lumber River** – 115.0-mile segment extends from Country Road 1412 in Scotland County downstream to the North Carolina/South Carolina state line and is divided into natural, scenic, and recreational segments. The Lumber River State Park has been established along the river.
- **New River** – 26.5-mile segment of the south fork of the New River extends from its confluence with Dog Creek in Ashe County downstream through Ashe and Alleghany Counties to its confluence with the north fork of the New River and from there the main fork of the New River in Ashe and Alleghany counties downstream to the Virginia state line and is classified a scenic river.

There are no rivers listed on the National Wild and Scenic Rivers System or the North Carolina Natural and Scenic Rivers Act of 1971 located in the immediate vicinity of JQF; therefore, compliance with the National Wild and Scenic Rivers Act will not be required for any development projects at JQF.

## 6.15 Cumulative Impacts

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Cumulative impacts are those that have an impact on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. The cumulative impacts of an action may be undetectable, but can add to other disturbances and eventually lead to a measurable environmental change.

Indirect and cumulative impacts created by development of the proposed projects outlined on the ALP and the consequences of subsequent related actions will be addressed as each project is implemented. Indirect impacts may include growth of the community and changes in land use, demographics, and socioeconomics that are created as a by-product of the proposed projects. Cumulative impacts could result from several individual actions that are each minor in nature, but together create a combined effect that may be considered significant.

In addition, anticipated induced and cumulative impacts, which are not associated with the continued expansion of JQF as outlined in on the ALP, may include:

- A number of indirect impacts to wetlands and water resources within the surrounding area may occur as a result of secondary development, such as additional discharge of stormwater into adjacent watercourses, pollutant loadings, and reduction in groundwater recharge from increased area of impervious surfaces.
- Loss of pervious surfaces by the Proposed Action that do not allow for rainfall infiltration and groundwater recharge.

Mitigation measures for secondary and cumulative impacts involve the management of land use and development. The future landscape and environmental health of the surrounding area would be determined by the planning and zoning decisions.

## **6.16 Irreversible and Irretrievable Commitment of Resources**

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Implementation of the proposed projects outlined on the ALP could involve the commitment of a range of natural, physical, human, and fiscal resources. The proposed projects outlined on the ALP could result in an irreversible and irretrievable use of:

- Vegetation
- Wildlife habitat

## **6.17 Regulatory Permits and Concurrence**

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Various activities associated with development projects at JQF could require permits and concurrence from local, state, and federal regulatory agencies, including but not limited to:

- USFWS Section 7 of the Endangered Species Act Consultation Concurrence (to be performed during environmental documentation preparation)
- NCDEQ Section 7 of the Endangered Species Act Consultation Concurrence (to be performed during environmental documentation preparation)
- NCSHPO Section 106 of the National Historic Preservation Act of 1966 Concurrence (to be performed during environmental documentation preparation)
- USACE Wetland Jurisdictional Determination (to be performed during environmental documentation preparation)
- City of Concord Land Use Compatibility Concurrence (to be performed during environmental documentation preparation)

- City of Concord Engineering plan review (to be performed during design)
- NCDEQ grading permit (to be performed during design)
- City of Concord water and sewer permit (to be performed during design)
- City of Concord building permit (to be performed during design)
- Cabarrus County building permit (to be performed during design)