

**Charles M.
Schulz –
Sonoma County
Airport (STS)
Layout Plan
Update**

**Appendix B
Environmental
Inventory**

April 2021

RS&H



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B. ENVIRONMENTAL INVENTORY AT SONOMA COUNTY AIRPORT

As discussed in the Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5070-6B Change 2, *Airport Master Plans*, the purpose of considering environmental factors in airport master planning is to help Sonoma County (the Airport Sponsor) thoroughly evaluate airport development alternatives and to provide information that will help expedite subsequent environmental processing. Although this specific project is an Airport Layout Plan (ALP) Update and not a Master Plan, the same factors are evaluated. For a summary description of the existing environmental conditions at Charles M. Schulz – Sonoma County Airport (Airport), environmental resource categories outlined in FAA Order 1050.1F (*Environmental Impacts: Policies and Procedures*) and the 1050.1F Desk Reference were used as a guide that help identify potential environmental effects during the ALP Update. Specifically, this Inventory assesses whether any changes have occurred to special-status species and wetland habitats since environmental reviews were conducted for the Runway Safety Enhancement Project in 2012, shortly after the 2012 Master Plan Update. This Inventory used aerial photographs, existing habitat and wetland delineation maps, and a field reconnaissance for resource evaluations. The Inventory also includes observations and mapped biological information collected during the past several years under the Wildlife Exclusion Perimeter Fence Project (currently ongoing).

The following environmental resource categories are not present within the vicinity of the Airport and therefore do not warrant further discussion:

- Coastal Resources. The Airport is located about 20 miles east of the Pacific Ocean well outside the designated California Coastal Zone. The Coastal Barriers Resources Act only applies to undeveloped coastal barriers along the Atlantic and Gulf Coasts and the Great Lakes.
- Wild and Scenic Rivers. The closest Wild and Scenic River is the American (Lower) River near Sacramento, about 70 miles east of the Airport. Therefore, no impacts to that river segment would occur.

B.1 Air Quality

The U.S. Environmental Protection Agency (USEPA) sets National Ambient Air Quality Standards (NAAQS) for certain air pollutants to protect public health and welfare through Section 109 of the Clean Air Act (CAA). The USEPA has identified the following six criteria air pollutants and has set NAAQS for them: Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO₂), 8-Hour Ozone (O₃), Particulate Matter (PM₁₀ or PM_{2.5}), and Sulfur Dioxide (SO₂).

Geographic areas that meet all the NAAQS are considered “in attainment” for the NAAQS. Geographic areas that exceed one or more NAAQS are designated as “nonattainment” areas, which can be marginal, moderate, serious, severe, and extreme depending on the degree to which they exceed the NAAQS. For purposes of air quality, Sonoma County is the geographic area in which the Airport is located.

States having nonattainment areas must develop a State Implementation Plan (SIP) that demonstrates how the geographic area will be brought back into attainment within designated timeframes. Geographic areas with prior nonattainment status that have since attained the applicable NAAQS are designated “maintenance areas.” The California Air Resources Board (CARB) develops the SIP for nonattainment areas in the State. The County does not currently meet the Federal 8-hour standard for healthy levels of ozone and has been designated by the USEPA as a marginal nonattainment area for ozone.¹ Further, the USEPA has determined the County exceeds the 24-hour standard for emissions of fine particulate matter (PM_{2.5}) and is recognized as a moderate nonattainment area. In the past, the County was designated as nonattainment for CO but in April 1998 the Bay Area was re-designated to attainment and now operates under a maintenance plan in order to prevent emissions from reaching an unhealthy level.

California maintains more stringent standards than the NAAQS to which the County must adhere. Sonoma County has been designated by the Bay Area Air Quality Management District (BAAQMD) as nonattainment for the 1-hour and 8-hour standards for O₃, the annual arithmetic mean and the 24-hour standards for coarse particulate matter (PM₁₀), and the annual arithmetic mean standard for PM_{2.5}. The County is in attainment for all other criteria pollutants.

B.2 Biological Resources

Biological resources include terrestrial and aquatic plant and animal species; game and non-game species; special status species; and environmentally sensitive or critical habitats. Vegetation types identified and mapped on the Airport consist of non-native grassland/ruderal, seasonal wetland, stream, pond, freshwater marsh, willow scrub/woodland, riparian woodland, oak woodland, and oak trees (see **Figure 1**).²

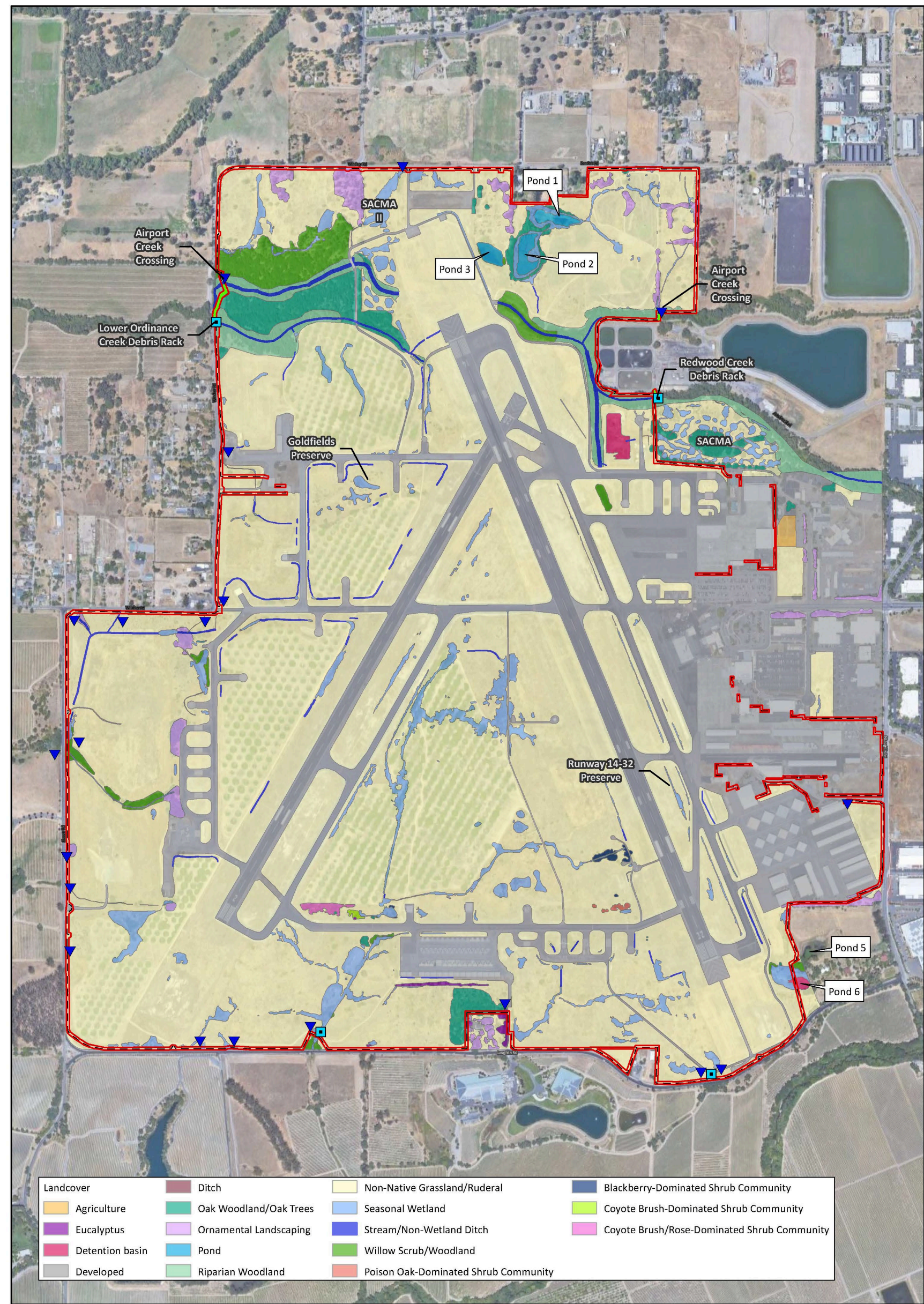
Non-developed areas of the Airport consist primarily of non-native grasslands and ruderal vegetation types and include many areas that are regularly or occasionally irrigated with treated wastewater and mowed or harvested for hay. The Airport contains several biological preserves, established by Sonoma County, that support vernal pools and other seasonal wetland habitats as well as stands of riparian and oak woodlands. Riparian corridors along Redwood Creek, Airport Creek, and Ordinance Creek are located in the northern portion of the Airport. Trees in the riparian corridors and adjacent oak woodlands east and west of the runway ends are regularly trimmed (typically once every two to three years, as needed) by the Airport Sponsor for runway safety purposes under FAA AC 150/5300-13.

There are currently five ponds within the Airport and one pond adjacent to the Airport that is hydrologically connected to one of the ponds within the Airport (see **Figure 1**). A series of three

¹ U.S. Environmental Protection Agency. Criteria Air Pollutants, January 18, 2017. Available: <https://www.epa.gov/criteria-air-pollutants>. Accessed: February 2021.

² **Figure 1** is taken from the Airport’s Wildlife Exclusion Perimeter Fence Project Biological Assessment (2021). Biological surveys were conducted of the Airport property and reports are available through the County.

FIGURE 1
VEGETATION TYPES WITHIN AIRPORT



LSA

LEGEND

- Vegetation Clearance Zone
- Fenceline
- Proposed Gravel Service Road
- Debris Rack
- Fence Drainage Crossing

0 400 800
FEET

SOURCE: Mead & Hunt (05/2019); LSA (07,2019); Google Maps Hybrid (06/2019).

Note: The identified fenceline does not necessarily follow the Airport property boundary at all locations.
Source: LSA, 2020; Mead & Hunt, 2020 Google Maps Hybrid, 2019

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constructed ponds occurs in a natural swale/drainage at the northern end of the Airport property, just south of Sanders Road. The ponds are fed by seasonal runoff from the local watershed which includes two upstream swales to the east. These ponds have edges of willow scrub/woodland habitat and contain deep water through most of the year. The two easternmost ponds appear connected and may have the same water surface elevation. Overflow from these two ponds may drain partially southward across a dam via a swale to Airport Creek, and partially westward across a dam to the westernmost pond. Overflow from the westernmost pond drains south through an outlet pipe to Airport Creek. Pond 4 was filled as part of the Runway Safety Area Improvement Project.

Two inter-connected ponds (one within the airport and one adjacent to the Airport) are located in the southeast corner of the Airport north of Laughlin Road (Ponds 5 and 6). The upstream northeastern pond (Pond 5) is located on private property and appears to be a dammed natural swale that receives local runoff, is relatively shallow, and may dry during the summer. The lower, southwestern pond (Pond 6) was modified during the Airport's Runway Safety Area Improvement Project and now functions as a detention basin. Pond 6 receives overflow from Pond 5 and runoff (through a culvert) from the taxiway and service road to the northwest. Most of the water drains out of Pond 6 within approximately 48 hours of a rain event or other input. The water drains southward toward Mark West Creek. Both ponds have willow scrub/woodland habitat along their edges. Pond 6 has seasonal wetland around the perimeter in an area that was previously inundated much of the year. An area of freshwater marsh along the northern edge of Pond 6 appears to be converting to seasonal wetland as a result of the modified hydrology. Refer to **Section B.1.13.1** for further discussion on Water Resources.

The U.S. Fish and Wildlife Service (USFWS) identifies a variety of plant and animal species, listed as Threatened or Endangered under the federal ESA, as having potential range (current or historic) within the Airport vicinity. Of the USFWS identified species, the following plant species have potential to be present or have suitable habitat at the Airport: Burke's goldfields (*Lasthenia burkei*), Many-flowered Navarretia (*Navarretia leucocephala* sp. *plieantha*), Sebastopol meadowfoam (*Limnanthes vinculans*), Showy Indian clover (*Trifolium amoenum*), Showy Indian clover (*Trifolium amoenum*), Sonoma Alopecurus (*Alopecurus aequalis* var. *sonomensis*), Sonoma sunshine (*Blennosperma bakeri*), and White sedge (*Carex albida*).

Of the USFWS identified species, the following animal species have potential to be present or have suitable habitat at the Airport: California tiger salamander, Sonoma County Distinct Population Segment (DPS) (*Ambystoma californiense*), California freshwater shrimp (*Syncaris pacifica*), and California red-legged frog (*Rana draytonii*).

The Airport vicinity also has the potential to contain a number of National Marine Fisheries Service (NMFS) listed species, which include California coastal chinook salmon evolutionary significant unit (ESU) (*Oncorhynchus tshawytscha*), Central California Coast coho salmon ESU (*Oncorhynchus kisutch*), and Central California Coast steelhead ESU (*Oncorhynchus mykiss*).

Although the Endangered Species Act (ESA) does not protect state-protected species or habitats, the National Environmental Policy Act of 1969 (NEPA) documentation ensures that environmental analysis prepared for airport actions addresses the potential effects to state-protected resources. The California Natural Diversity Database (CNDDDB) identifies a variety of state protected species and/or habitat that may be present on or near the Airport. Of the CNDDDB identified species, the following plant species have potential to be present or have suitable habitat at the Airport: Baker's goldfields (*Lasthenia californica* ssp. *bakeri*), Baker's Navarretia (*Navarretia leucocephala* ssp. *bakeri*), Bent-flowered Fiddleneck (*Amsinckia lunaris*), Boggs Lake Hedge-hyssop (*Gratiola heterosepala*), Brownish Beaked-rush (*Rhynchospora capitellata*), California Beaked-rush (*Rhynchospora californica*), Congested-headed Hayfield Tarplant (*Hemizonia congesta* ssp. *congesta*), Dwarf Downingia (*Downingia pusilla*), Fragrant fritillary (*Fritillaria liliacea*), Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*), Pappose tarplant (*Centromadia parryi* ssp. *parryi*), Peruvian Dodder (*Cuscuta obtusiflora* var. *glandulosa*), Pitkin Marsh Paintbrush (*Castilleja uliginosa*), Round-headed Beaked-rush (*Rhynchospora globularis*), Saline Clover (*Trifolium hydrophilum*), Swamp Harebell (*Campanula californica*), Thurber's Reed Grass (*Calamagrostis crassiglumis*), and White Beaked-rush (*Rhynchospora alba*).

Of the CNDDDB identified species, the following animal species have potential to be present or have suitable habitat at the Airport: Western pond turtle (*Emys marmorata*), Burrowing owl (*Athene cunicularia*), Loggerhead shrike (*Lanius ludovicianus*), Northern harrier (*Circus cyaneus*), White-tailed kite (*Elanus leucurus*), Yellow warbler (*Dendroica petechia brewsteri*), Yellow-breasted chat (*Icteria virens*), Grasshopper sparrow (*Ammodramus savannarum*), American badger (*Taxidea taxus*), Pallid bat (*Antrozous pallidus*), and Townsend's big-eared bat (*Corynorhinus townsendii*).

The Migratory Bird Treaty Act (MBTA) prohibits the taking of any migratory birds, their parts, nests, or eggs except as permitted by regulations, and does not require intent to be proven. Trees are located on or adjacent to the Airport that have the potential to hold nests for migratory bird species.

B.3 Climate

Greenhouse gases (GHG) are gases that trap heat in the earth's atmosphere. Both naturally occurring and man-made GHGs primarily include water vapor, carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Activities that require fuel or power are the primary stationary sources of GHGs at airports. Aircraft and ground access vehicles that are not under the control of an airport sponsor, typically generate more GHG emissions than airport-controlled sources. Research has shown there is a direct correlation between fuel combustion and GHG emissions. In terms of U.S. contributions, the Government Accountability Office (GAO) reports that "domestic aviation contributes about three percent of total carbon dioxide emissions, according to USEPA data," compared with other industrial sources, including the remainder of the transportation sector (20 percent) and power generation

(41 percent).³ The International Civil Aviation Organization (ICAO) estimates that GHG emissions from aircraft account for roughly 1.3 percent of all anthropogenic GHG emissions globally.⁴

For disclosure purposes, GHG emissions related to any increase in Airport activity should be calculated at the project level, as well as GHG emissions related to construction activities.

B.4 Department of Transportation Act, Section 4(f) and Land and Water Conservation Fund Act Section 6(f)

The U.S. Department of Transportation (USDOT) Act, Section 4(f) provides that no project that requires the use of any land from a public park or recreational area, wildlife and waterfowl refuge, or historic site be approved by the Secretary of the Interior unless there is no viable alternative and provisions to minimize any possible harm are included in the planning. Similarly, the Land and Water Conservation Fund (LWCF) Act prevents the conversion of lands purchased or developed with Land and Water Conservation funds to non-recreation uses, unless the Secretary of the Interior, through the National Park Service, approves the conversion. Conversion may only be approved if it is consistent with the comprehensive statewide outdoor recreation plan when the approval occurs. Additionally, the converted property must be replaced with other recreation property of reasonably equivalent usefulness and location, and at least equal fair market value.

Section 6(f) of the LWCF Act, 16 United States Code § 4601 et. seq. provides funds for buying or developing public use recreational lands through grants to local and state governments. LWCF Act Section 6(f)(3) prevents conversion of lands purchased or developed with LWCF to non-recreation uses unless the conversion is approved by the Secretary of Interior acting through the National Park Service (NPS). Actions that would use Section 4(f) lands must also comply with Section 6(f) of the LWCF Act, 16 USC § 4601-8(f), if the property was acquired or developed with financial assistance under the LWCF State Assistance Program. Section 6(f) is administered by the NPS and requires that areas funded through the program remain for public outdoor recreation use or be replaced by lands of equal value, location, and recreation usefulness.

There are two known historic resources in the Airport vicinity that are eligible for the National Register of Historic Places (NRHP). The James H. and Frances E. Laughlin House is approximately 0.7 miles east of the Airport property.⁵ Additionally, there is a collection of single-family residences referred to as the Talmadge Estate which are eligible for listing under Criterion C of the NRHP as a distinctive example of late 19th-century Neoclassical architecture. See the section on Historical, Architectural, Archeological, and Cultural Resources for additional analysis of

³ U.S. Government Accountability Office, Report to Congressional Committees, Aviation and Climate Change, June 2009. Available: <http://www.gao.gov/new.items/d09554.pdf>.

⁴ International Civil Aviation Organization (ICAO) Environmental Report 2019, *Destination Green: The Next Chapter*, 2019. Available: [https://www.icao.int/environmental-protection/Documents/ICAO-ENV-Report2019-F1-WEB%20\(1\).pdf](https://www.icao.int/environmental-protection/Documents/ICAO-ENV-Report2019-F1-WEB%20(1).pdf).

⁵ National Park Service, *National Register of Historic Places – NPS Digital Library*. Available: [National Register of Historic Places \(U.S. National Park Service\) \(nps.gov\)](https://www.nps.gov/nrhp/).

NRHP and archaeological resources of historic significance on and in proximity of Airport property.

The closest recreational facility is R.T. Mitchell Park, which is approximately 0.7 miles northeast of the Airport property and is not a Section 6(f) property. There are no wildlife and waterfowl refuges within vicinity of the Airport.

B.5 Farmlands

The FAA requires consideration of “important farmlands,” which it defines to include “all pasturelands, croplands, and forests considered to be prime, unique, or statewide or local important lands.”

No prime farmland or soil of statewide significance is present at the Airport. Further, soils suitable for agriculture at the Airport were dedicated to urban development prior to the passage of the Farmland Protection Policy Act of 1981. However, farmland is located within proximity of the Airport, specifically to the west and south. As shown in **Figure 2**, parcels directly to the south of the Airport and one to the west include land protected under Williamson Act Contract.

While no farmlands are located at the Airport, if any project extends outside of the existing Airport boundaries, there is potential to affect farmlands. Farmland impacts would then need to be evaluated using the Natural Resources Conservation Service Conversion Impact Rating Form AD-1006.

B.6 Hazardous Materials, Solid Waste, and Pollution Prevention

Solid waste from Sonoma County is landfilled outside of Petaluma on Mechem Road. The Sonoma County Department of Transportation and Public Works owns and operates four transfer stations throughout Sonoma County, located in Annapolis, Guerneville, Healdsburg, and Sonoma. A closed landfill is located on the southwest side of the Airport property and visible from Slusser Road. The County uses practices to prevent unnecessary exposure of people and property to risks of damage or injury from hazardous materials according to the *Public Safety Element* of the Sonoma County General Plan 2020.⁶

The Airport was formerly the site of the Santa Rosa Army Airfield (SRAAF), which was established as a sub-base to the Hamilton Army Airfield and was used to conduct training operations for fighter squadrons from 1942 to 1946. The primary mission of the SRAAF was to complete pre-combat training for fighter crews, including gunnery, bombing, and chemical warfare training. In 1982, and again in 1985, construction projects near Ordinance Road uncovered broken glass ampules containing chemical agents. After both incidents, the Army sent a clean-up crew to perform additional evaluation of the sites. The Army concluded that numerous unbroken glass

⁶ County of Sonoma. *General Plan 2020*. Amended August 2, 2016. Available: <https://sonomacounty.ca.gov/PRMD/Long-Range-Plans/General-Plan/>

Figure 2
WILLIAMSON ACT FARMLAND



Source: Sonoma County, 2019; Town of Windsor, 2019; RS&H 2021; Mead & Hunt, 2021

ampules were deposited in the vicinity of Ordinance Road during World War II training sessions as a result of equipment malfunctions. No evidence indicates that bulk chemical agents were purposely disposed of on this site. However, additional unbroken ampules could still exist in this location (see **Figure 3**).⁷

An investigation conducted by the California Regional Water Quality Control Board identified twelve separate areas of concern within the former SRAAF boundary. Aside from the underground storage tanks (USTs) that were cleaned and closed in 2006, the remaining eleven areas of concern showed no evidence of hazardous or toxic waste, explosive ordinance, or hazardous building debris.⁸

A variety of petrochemicals and chemicals products such as avgas, Jet A, solvents, cleaning products, various other lubricants, aqueous film forming foam (AFFF), and per- and polyfluoroalkyl substances (PFAS) are used and have been used at the Airport. Since the Airport is a licensed hazardous waste generator, it must comply with all federal, state, and county regulations relating to the handling of hazardous materials. The Airport has a General Industrial Storm Water Permit with the Regional Water Quality Control Board that requires monitoring and inspection of Airport facilities to prevent future hazardous material impacts to the local environment.

The Airport Sponsor and on-site tenants currently have a number of permitted and regulated fueling facilities within the Airport boundaries. Each of these facilities is operated under federal, state, and county regulations. Other hazardous materials used to support operations at the Airport are regularly transported to and from the facility in accordance with all local, state, and federal regulations.

B.7 Historical, Architectural, Archeological, and Cultural Resources

According to the NRHP, the nearest historic structure listed is James H. and Frances Laughlin House, which is about 0.7 miles east of the Airport.

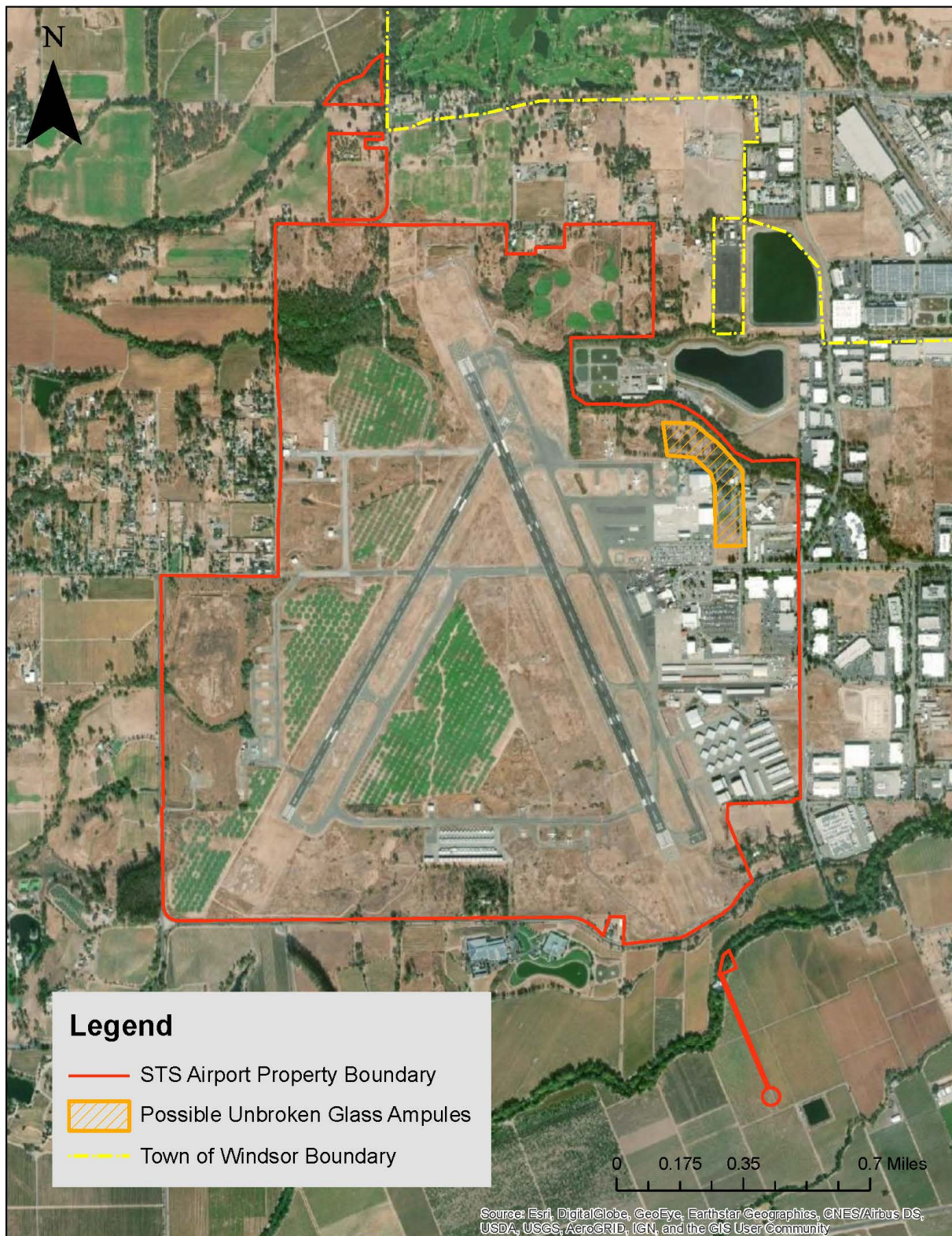
The Airport Sponsor recently acquired the 2.88-acre parcel (assessor's parcel number [APN] 059-200-002) at 3725 Laughlin Road and will use Passenger Facility Charges (PFCs) for reimbursement of acquisitions costs. The Airport's 2011 Master Plan⁹ identifies the property's acquisition to eliminate the potential for incompatible development adjacent to the Airport. Due to the use of PFCs for reimbursement, the property acquisition is an "undertaking" as defined at 36 CFR Section 800.16(y) with the potential to affect historic properties (36 CFR Section 800.3(a)). The FAA, therefore, must address the requirements of Section 106 of the National Historic

⁷ County of Sonoma, Permit and Resource Management Department, *Mitigated Negative Declaration- Apex Aviation Hangar Project*, May 2, 2005.

⁸ Letter from California Regional Water Quality Control Board, *Notice of Proposed No Further Action*, February 24, 2006.

⁹ County of Sonoma. *Charles M. Schulz – Sonoma County Airport Master Plan*. July 2011. Available: <https://sonomacountyairport.org/about-sts/master-plan/>.

Figure 3
HAZARD SITES IN THE AIRPORT BOUNDARY



Source: RS&H, 2021; Mead & Hunt, 2021.

Preservation Act of 1966, as amended, by taking into account the effects of the undertaking on any district, site, building, structure, or object included in or eligible for inclusion in the NRHP within the area of potential ground disturbance.

A cultural resources investigation of the 3725 Laughlin Road property acquisition, conducted in November 2019, identified no archaeological historic properties in the Area of Potential Effects (APE). However, the investigation did identify a NRHP-eligible single-family residence and associated buildings dated from 1891 (i.e., the “Talmadge Estate”). The Talmadge Estate appears eligible for listing under Criterion C of the NRHP as a distinctive example of late 19th-century Neoclassical architecture.

The Airport property has been heavily disturbed as part of previous Airport-related development. Past environmental documentation has identified a Native American site of interest on Airport property. Tribes with interests in Sonoma County include:

- Absentee-Shawnee Tribe of Indians of Oklahoma;
- Cloverdale Rancheria of Pomo Indians of California;
- Dry Creek Rancheria Band of Pomo Indians, California;
- Federated Indians of Graton Rancheria, California;
- Kashia Band of Pomo Indians of the Stewarts Point Rancheria, California;
- Koi Nation of Northern California;
- Lytton Rancheria of California;
- Middletown Rancheria of Pomo Indians of California;
- Scotts Valley Band of Pomo Indians (Scotts Valley Band of Pomo Indians of California); and
- Sherwood Valley Rancheria of Pomo Indians of California.

B.8 Land Use

The Sonoma County General Plan 2020 identifies planned land uses for the unincorporated areas immediately surrounding the Airport (see **Figure 4**).¹⁰ Planned land uses north of the Airport include Diverse Agriculture (one dwelling unit per 10 to 60 acres) and Rural Residential uses (one dwelling unit per 2.5 to five acres). South of the Airport planned land uses include Land Intensive Agriculture (one dwelling unit per 20 to 100 acres) and Rural Residential (one dwelling unit per four acres).

The Town of Windsor’s General Plan identifies a mix of planned land uses for the areas north of the Airport.¹¹ The nearest point within the Town limits is 0.7 miles to the northeast of the existing end of Runway 14. The incorporated areas of Windsor located within the Airport vicinity

¹⁰ County of Sonoma. *General Plan 2020*. Amended August 2, 2016. Available: <https://sonomacounty.ca.gov/PRMD/Long-Range-Plans/General-Plan/>.

¹¹ Town of Windsor, *Town of Windsor General Plan 2015*, July 20, 2005.

are extensively developed. Therefore, planned land uses reflect the uses that currently exist and include Low-Medium Density Residential (three to six dwelling units per acre), and Medium Density Residential (five to eight dwelling units per acre). The Town's "Sphere of Influence," which represents the ultimate physical boundaries of the Town, encompasses unincorporated County lands outside the limits of the Town's boundary. These areas are slated for Estate Residential/Low Density Residential (0.2 to three dwelling units per acre) and are located approximately two miles northwest of the existing end of Runway 14 (see **Figure 4**).

B.9 Natural Resources and Energy Supply

Natural resources (e.g., water, asphalt, aggregate, etc.) and energy use (e.g., fuel, electricity, etc.) at an airport is a function of the needs of aircraft, support vehicles, airport facilities, support structures, and terminal facilities.

Water is the primary natural resource used at the Airport on a daily basis. Asphalt, aggregate, and other natural resources have also been used in various construction projects at the Airport. None of the natural resources that the Airport uses, or has used, are in rare or short supply. Energy use at the Airport is primarily in the form of electricity required for the operation of Airport-related facilities (e.g., terminal building, hangars, airfield lighting) and fuel for aircraft, aircraft support vehicles/equipment, and Airport maintenance vehicles/equipment.

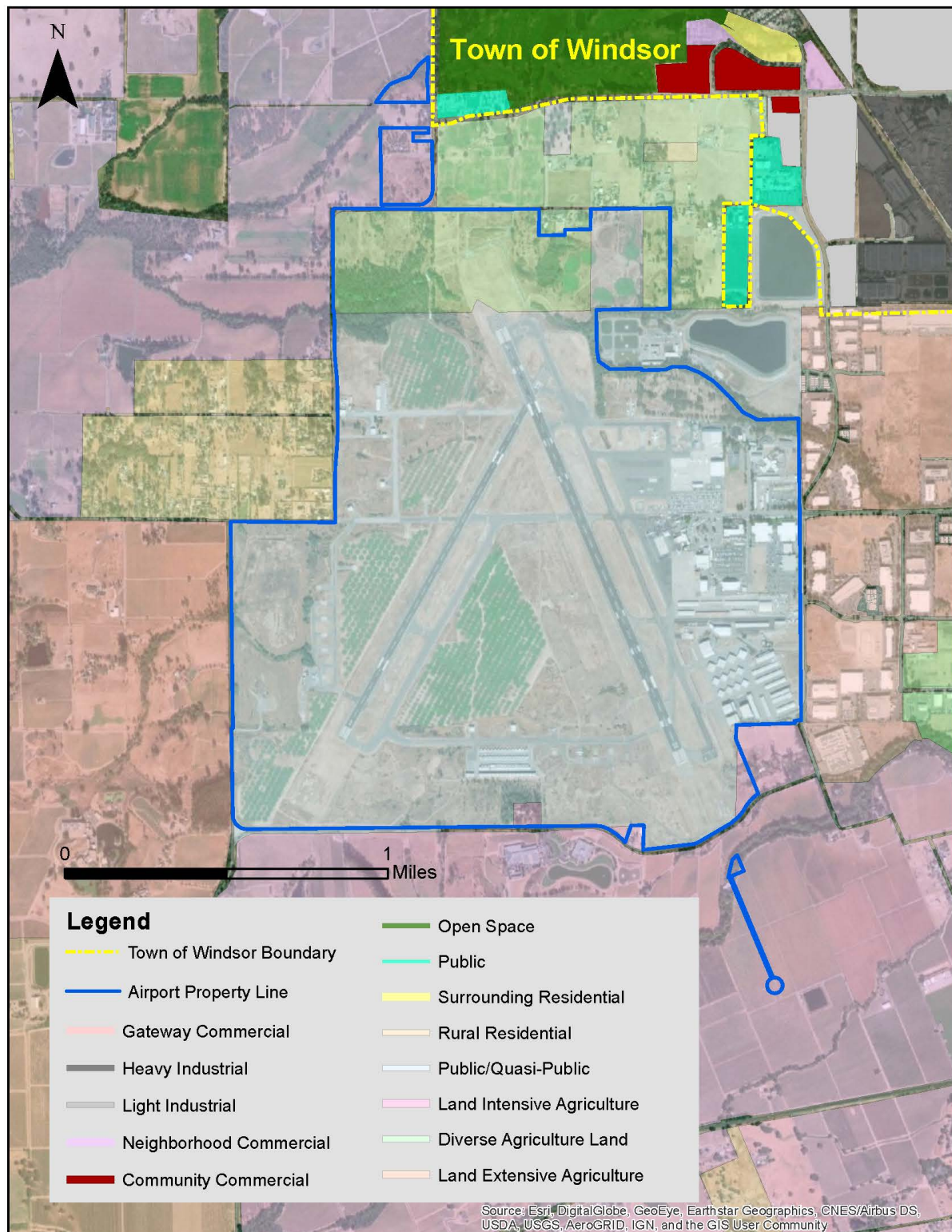
There are currently no mining activities for oil, natural gas, sand, gravel, or crushed stone that occur at the Airport. The Airport Sponsor receives water through the Town of Windsor. Water resources are used for Airport-related activities, including aircraft/vehicle washing, irrigation, and potable drinking water. Pacific Gas and Electric (PG&E) supplies electricity to the Airport while AT&T provides telecommunication to the Airport via a Minimum Point of Entry (MPOE). All sources of energy are provided via underground conduits.

B.10 Noise and Compatible Land Use

Day-Night Sound Level (DNL) is based on sound levels measures in relative intensity of sound, (decibels or dB) on the "A-weighted scale" or dBA over a time-weighted average normalized to a 24-hour period. DNL has been widely accepted as the best available method to describe aircraft noise exposure.¹² Appendix B, paragraph B-1 of FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, recognizes the use of the Community Noise Equivalent Level (CNEL) as an alternative metric to the Day/Night Average Sound Level (DNL) in California. FAA Order 1050.1F, Exhibit 4-1 defines a significant noise impact as an action that would increase noise by 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the CNEL 65 dB

¹² Federal Aviation Administration, *Technical Support for Day/Night Average Sound Level (DNL) Replacement Metric Research*, Final Report, June 14, 2011. Available: https://www.faa.gov/about/office_org/headquarters_offices/apl/research/science_integrated_modeling/noise_impacts/media/6-14-2011_finalreport_metricsmestre_etal_061411_part1.pdf Accessed: October 19, 2020.

FIGURE 4
EXISTING LAND USE IN AIRPORT VICINITY



Source: Sonoma County, 2019; Town of Windsor, 2019; RS&H 2021; Mead & Hunt, 2021

noise exposure level, or that will be exposed at or above the CNEL 65 dB level due to a CNEL 1.5 dB or greater increase, when compared to the No Action Alternative for the same timeframe.

As determined in the Airport's Comprehensive Airport Land Use Plan (CALUP),¹³ all residential areas are considered compatible with cumulative noise level below DNL 55 dBA. As shown in **Figure 4**, there are residential land uses near the Airport. These areas may be sensitive to aircraft noise associated with the Airport.

B.11 Socioeconomics Environmental Justice, and Children's Health and Safety Risks

The primary considerations of a socioeconomics analysis are the economic activity, employment, income, population, housing, public services, and social conditions of the area. The Airport is within two census tracts: Census Tract 1538.01 and Census Tract 1527.02.

The per capita income for the two census tracts at the Airport are less than that for Sonoma County and the Town of Windsor, but about the same as that for the City of Santa Rosa (see **Table 1**).

TABLE 1
PER CAPITA INCOME LEVELS

Area	Dollars
Census Tract 1538.01	\$38,109
Census Tract 1527.02	\$36,365
Sonoma County	\$42,178
City of Santa Rosa	\$36,935
Town of Windsor	\$40,960

Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates

The U.S. Census Bureau uses a set of money income thresholds that vary by size to determine who is in poverty. A family's total income must be less than the family's threshold, and then every individual in the family is considered in poverty. Currently, the national poverty level for a family of four is \$26,695¹⁴ with a rate of 12.3 percent. The poverty rate for the applicable jurisdictions in the Airport vicinity is shown in **Table 2**. The poverty rate within the Airport vicinity is below the national poverty rate as well as that of Sonoma County and the City of Santa Rosa, and about the same as the poverty rate of the Town of Windsor.

¹³ County of Sonoma. *Comprehensive Airport Land Use Plan*. Available: <https://sonomacounty.ca.gov/PRMD/Long-Range-Plans/Airport-Land-Use-Plan/>.

¹⁴ U.S. Census Bureau, *Poverty Thresholds by Size of Family and Number of Children*, available at: <https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html>. Accessed March 2021.

TABLE 2
POVERTY RATES (ALL FAMILIES)

Area	Percent
Census Tract 1538.01	4.0
Census Tract 1527.02	3.7
Sonoma County	7.2
City of Santa Rosa	10.3
Town of Windsor	4.0

Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates

According to the U.S. Census Bureau, approximately 75 percent of the total population in Sonoma County is comprised of people of white ethnic decent. The largest minority race groups for the County include people that identify as Hispanic / Latino and people of Asian descent.¹⁵

According to the U.S. Census Bureau, the percent of minority populations in the study area ranges from 25 percent to 31.2 percent on average from the latest data available. See **Table 3** for the racial composition of the two census tracts at the Airport, Town of Windsor, Santa Rosa, and Sonoma County.

TABLE 3
MINORITY POPULATIONS

	Census Tract 1538.01	Census Tract 1527.02	Sonoma County	City of Santa Rosa	Town of Windsor
<i>Percent by Ethnicity Group^{a/}</i>					
White	75.0%	68.8%	74.8%	66.8%	74.3%
Black or African American	1.1%	1.7%	1.7%	2.6%	0.9%
American Indian and Alaska Native	1.8%	0.3%	0.9%	0.1%	1.7%
Asian	3.5%	3.0%	4.1%	5.5%	2.6%
Native Hawaiian and Other Pacific Islander	0.0%	0.0%	0.3%	0.6%	0.5%
Some Other Race	11.6%	14.2%	12.9%	17.1%	12.8%
Two or More Races	6.9%	12.0%	5.4%	6.0%	7.1%
<i>Total Residents</i>	<i>10,263</i>	<i>5,342</i>	<i>499,772</i>	<i>179,701</i>	<i>27,447</i>

^{a/}: Percentages may not equal 100 percent due to rounding.

Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates

¹⁵ U.S. Census Bureau, *American Fact Finder*, available at:
<https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>. Accessed March 2021.

B.12 Visual Effects

FAA Order 1050.1F describe factors to consider within light emissions and visual resources/visual character. Potential impacts of light emissions include the annoyance or interference with normal activities, as well as effects to the visual character of the area due to light emissions, including the importance, uniqueness, and aesthetic value of the affected visual resources.

B.12.1 Light Emissions

Current Airport facilities are illuminated for safety and security reasons by various types of landside lighting for buildings, access roads, apron areas, and automobile parking areas, as well as airside lighting for the runway, taxiways, and apron areas. Runway, taxiway, and apron areas are lighted for nighttime operations as well. The closest light sensitive land use to the Airport is a rural residential property located just southeast of Runway 14-32 and south of the Airport hangar facilities.

B.12.2 Visual Resources and Visual Character

Structures at the Airport include, but are not limited to, the terminal building, fixed base operators, hangars, and maintenance buildings. The Airport is zoned as Public Facilities and is developed in a manner that is consistent with this zoning.

Vegetation (e.g., trees and shrubs) helps to reduce both the light emissions and visual effects to the Airport for residential areas. Direct views of the Airport from rural residential property located just southeast of Runway 14-32 and south of the Airport hangar facilities are blocked by tall trees and landscaping. Additional residential land uses are located on the west side of the Airport across Windsor Road and on the north side of the Airport along Sanders Road. The view to the Airport from these properties is partially blocked by existing landscaping.

Consideration of aesthetics in the future at the Airport should attempt to adhere to existing design, art, and architecture at the Airport and in the vicinity in order to minimize any potential viewshed effects.

B.13 Water Resources

Water resources are considered wetlands, floodplains, surface waters, groundwater and wild and scenic rivers. These resources typically function as a single, integrated natural system that are important in providing drinking water and in supporting recreation, transportation and commerce, industry, agriculture, and aquatic ecosystems.

B.13.1 Wetlands

The Clean Water Act (CWA) defines wetlands as “. . . those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal

circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.”¹⁶ Wetlands have three necessary characteristics:

- Water: presence of water at or near the ground surface for a part of the year;
- Hydrophytic Plants: a preponderance of plants adapted to wet conditions; and
- Hydric Soils: soil developed under wet conditions.

As shown in **Figure 5**, the National Wetlands Inventory has identified wetlands within and in close proximity to the Airport.¹⁷ According to the Biological Assessment (BA) prepared for the Airport’s Wildlife Exclusion Perimeter Fence Project (2021),¹⁸ the Airport property contains the following seasonal wetlands: vernal pools, swales, ditches, drainages, and depressions with wetland vegetation. The seasonal wetlands are generally consistent with the following two vegetation alliances:

- Smooth Goldfield’s vernal pools (*Lasthenia glaberrima* Herbaceous Alliance), consisting of smooth goldfields (*Lasthenia glaberrima*), slender popcorn-flower (*Plagiobothrys stipitatus*), Douglas meadowfoam (*Limnanthes douglasii*), maroon-spot downingia (*Downingia concolor* var. *concolor*), winged water starwort (*Callitriche marginata*), blennosperma (*Blennosperma nanum* var. *nanum*), semaphore grass (*Pleuropogon californicus*), annual hairgrass (*Deschampsia danthonioides*), and coyote thistle (*Eryngium armatum*).
- Other Seasonal Wetlands, which is characterized by disturbed pools and swales and other seasonal wetland areas, as well as some drainage ditches, tend to be dominated by non-native species such as Italian ryegrass, Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), curly dock (*Rumex crispus*), pennyroyal (*Mentha pulegium*), rabbit’s-foot grass (*Polypogon monspeliensis*), spinyfruit buttercup (*Ranunculus muricatus*), and Bermuda grass (*Cynodon dactylon*).

Refer to **Section B.1.2** for a description of ponds located on Airport property.

B.13.2 Floodplains

Floodplains are “...lowland areas adjoining inland and coastal water which are periodically inundated by flood waters, including flood-prone area of offshore islands.”¹⁹ Floodplains are often referred to in terms of the 100-year floodplain, which is intended to indicate the one percent chance of a flood occurring in any given year. EO 11988 directs federal agencies to take action to reduce the risk of flood loss; minimize the impact of floods on human safety, health,

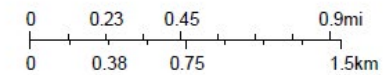
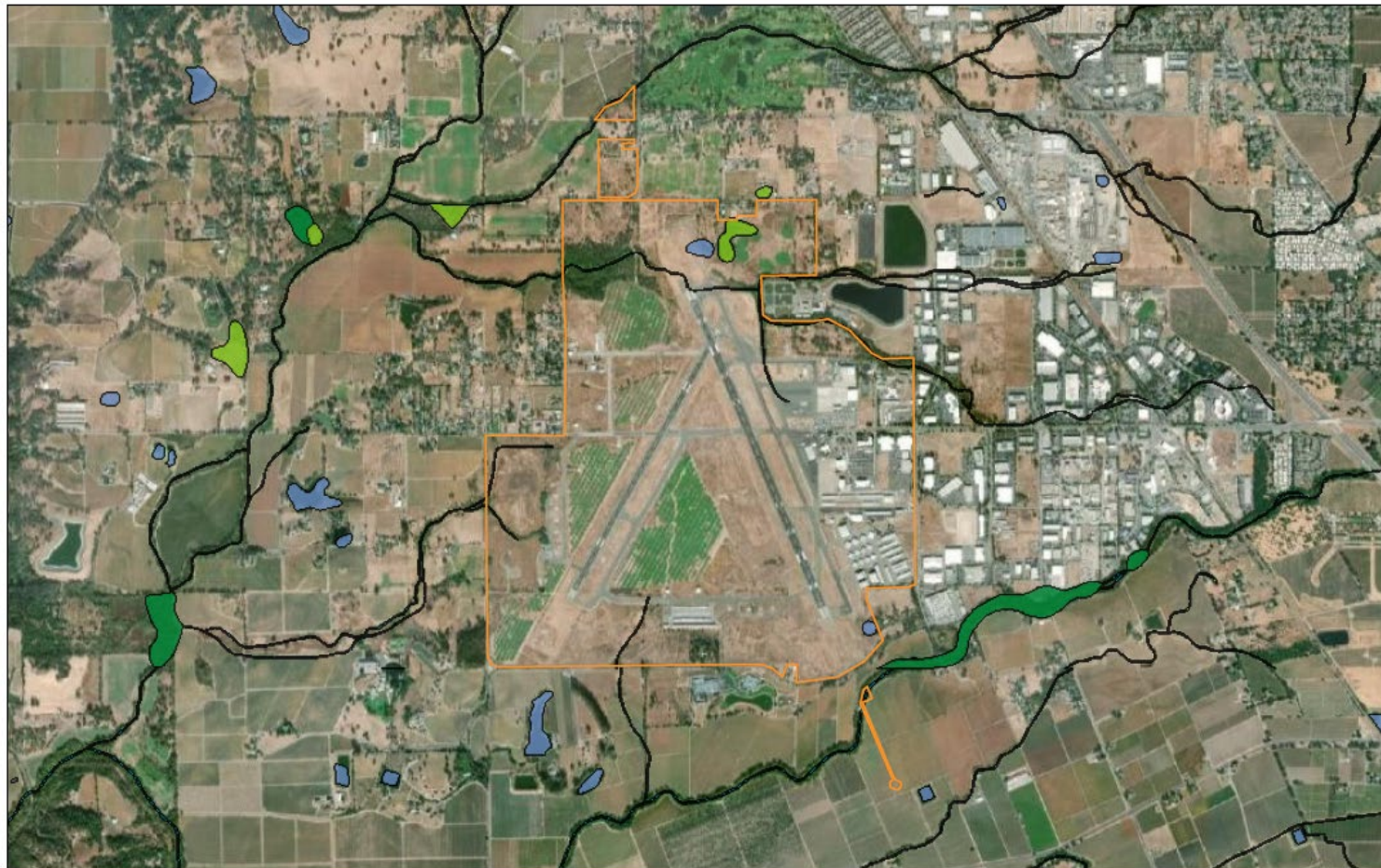
¹⁶ U.S. Environmental Protection Agency, Section 404 of the Clean Water Act. Available: <https://www.epa.gov/cwa-404/how-wetlands-are-defined-and-identified-under-cwa-section-404>.

¹⁷ U.S. Fish and Wildlife Service, National Wetlands Inventory Mapper, Sonoma County Airport. Available: <https://www.fws.gov/wetlands/data/mapper.html>. Accessed: February 22, 2021.

¹⁸ LSA Associates, Inc. Biological Assessment: Charles M. Schulz – Sonoma County Airport Proposed Wildlife Exclusion Perimeter Fence Project. Sonoma County. February 2021.

¹⁹ Executive Order 11988, *Floodplain Management*, May 1, 1977.

Figure 5
WETLANDS WITHIN AIRPORT VICINITY



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GISUserCommunity, U.S. Fish and

Source: USFWS National Wetlands Inventory Mapper 2021; RS&H, 2021; Mead & Hunt, 2021

and welfare; and restore and preserve the natural and beneficial floodplains. EO 11988 does not allow activities in a floodplain unless there is no practicable alternative and measures to minimize unavoidable short-term and long-term impacts are included. USDOT Order 5650.2 outlines the policies and procedures for ensuring that proper consideration is given to the avoidance and mitigation of adverse floodplain impacts in agency actions, planning programs, and budget requests. Therefore, the objective is to avoid, to the extent practicable, any impacts within the 100-year floodplain.

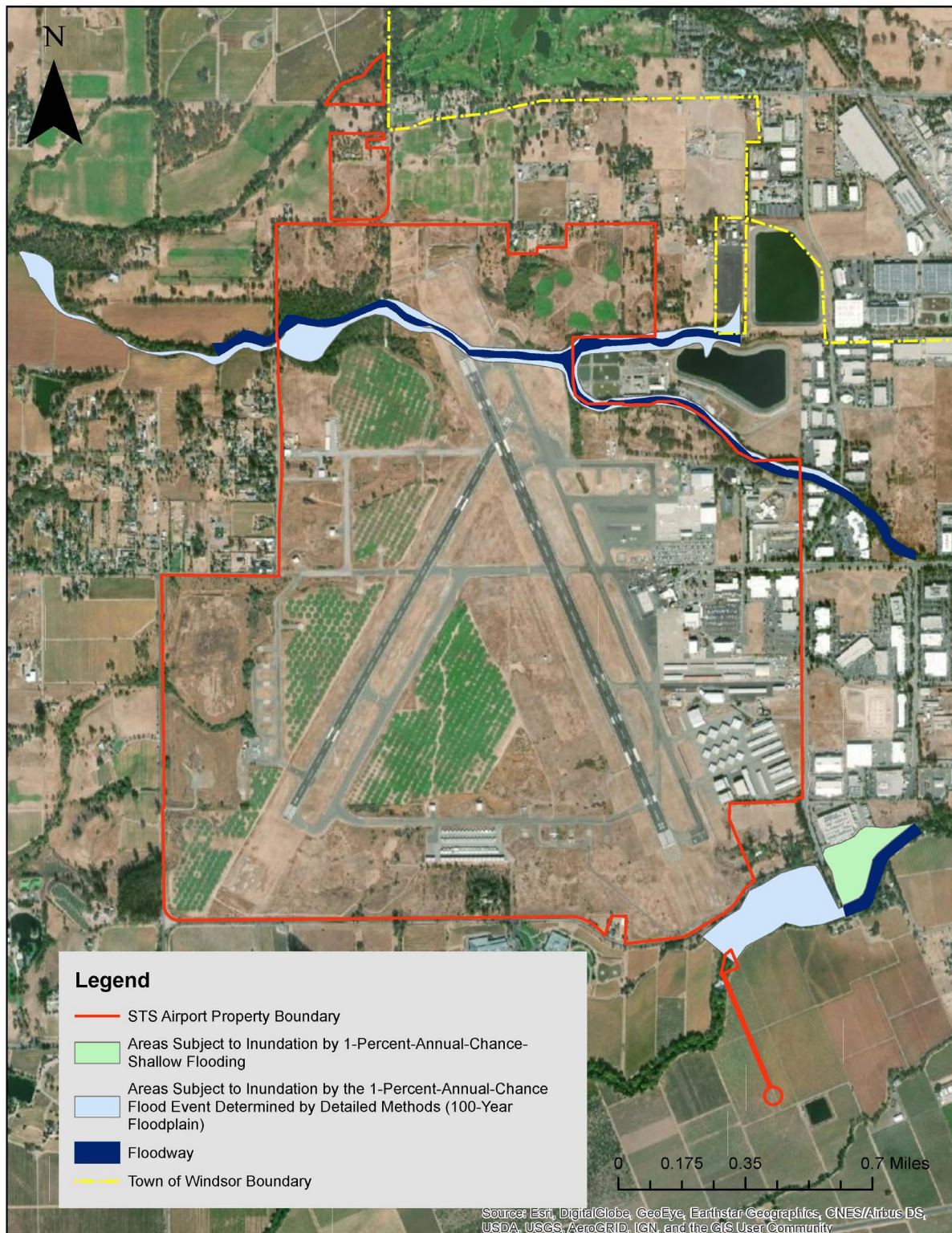
Three creeks flow across the Airport, generally from east to west. The creeks are tributaries to Mark West Creek via Windsor Creek to the west of the Airport. Runoff from the northern and northeastern portions of the Airport drains to Redwood Creek and Airport Creek. Both creeks support riparian or wetland habitat within the Airport. Ordinance Creek has been largely channelized or put into culvert and provides drainage to the developed area with hangars and aircraft storage on the eastern portion of the Airport. An approximately 890-foot segment of Airport Creek has been put into a culvert beneath the Runway Safety Area associated with the approach end of Runway 14. Runoff from the southern portion of the Airport drains to depressions along the north side of Laughlin Road and then flows via culverts and unnamed seasonal streams to Mark West Creek to the south. The western portion of the Airport drains to Airport Creek, which flows via an existing culvert under Windsor Road. Airport Creek and Redwood Creek both experience flooding under current conditions. Flood insurance rate map (FIRM) designations for the Airport vicinity, which are shown on **Figure 6**, indicate that floodplains exist within the Airport boundary. The floodway at the Airport, along Mark West Creek, includes both Zone AE and Zone AO Federal Emergency Management Agency (FEMA) designation. Floodways are used to discharge base flood waters without increasing the water elevation beyond a specified height. Zone AE flood insurance rate zones are used to designate areas where there is a 1-percent-annual-chance for flooding to occur. These areas are determined by detailed methods of analysis.²⁰ While both Zones AE and AO have a 1-percent-annual-chance of flooding in a 100-year period, Zone AE has detailed base flood elevations on the FIRM. The base flood elevation ranges from 88 feet to 110 feet in the flood zones.

B.13.3 Surface Waters

Surface waters include areas where water collects on the surface of the ground, such as streams, rivers, lakes, ponds, estuaries, and oceans. The Airport, which is in the jurisdiction of the North Coast Regional Water Quality Control Board, is located within the Mark West Creek subbasin of the Russian River Watershed. The subbasin is comprised of approximately 83 square miles that includes Windsor and the northern portion of Santa Rosa. Elevations in the subbasin range from 50 feet above sea level at the confluence of Mark West Creek and the Russian River to nearly

²⁰ FEMA, Frequently Asked Questions, available at: http://www.fema.gov/plan/prevent/fhm/fq_genin.shtm. Accessed July 2019.

Figure 6
FLOODPLAIN MAP



Source: FEMA, 2021; RS&H, 2021; Mead & Hunt, 2021

2,000 feet above sea level at its eastern boundary. The eastern portion of the subbasin is considerably more topographically diverse with mountains and valleys while the western portion, where the Airport is located, is generally flat. The site receives an average annual rainfall of approximately 31 inches.

The Airport is set within the Santa Rosa Plain. Primary water quality impairments in the Santa Rosa Plain as described in the County of Sonoma General Plan and Basin Plan are sedimentation and siltation, nutrients and pathogens. Agricultural practices and the conversion of rangeland and forestland to vineyard have increased sedimentation and siltation in the Mark West Creek subbasin. Nutrients have been introduced to the subbasin through the use of fertilizers, grazing livestock, leaking septic systems and other nonpoint sources. Pathogens, primarily fecal coliform bacteria, have been introduced into the watershed by wastewater discharges, leaking septic systems, and from animal waste.

B.13.4 Groundwater

Groundwater is described as the “subsurface water that occupies the space between sand, clay, and rock formations.”²¹ The nearest sole source aquifer to the Airport is the Santa Margarita Aquifer in Scotts Valley, which is located about 100 miles south of the Airport.

Approximately 42 percent of Sonoma County uses groundwater for potable and irrigation uses. The Sonoma County General Plan establishes four classifications to indicate general areas of groundwater availability:

- Class I are the major groundwater basins;
- Class II are major natural recharge areas;
- Class III are marginal groundwater availability areas; and
- Class IV are areas with low or highly variable water yield.

The General Plan designates the Airport to be over a major groundwater basin (Class I).

The Airport is located entirely within the Santa Rosa Valley Groundwater Basin and the Santa Rosa Plain Subbasin, which is distinct from the surface water subbasin. The Santa Rosa Plain Subbasin is the largest of the subbasins with a total surface area of approximately 125 square miles, extending from Rohnert Park in the south to between Healdsburg and Windsor in the north. In accordance with the Water Quality Control Plan for the North Coast Region, groundwater has been impaired at various locations region-wide particularly as a result of agricultural, industrial, and commercial chemical handling, storage, and disposal practices. Particular problems are known to exist in several groundwater basins within the Region, including the Santa Rosa Plain. The depth of the groundwater for the Santa Rosa Valley Basin and the Santa Rosa Plain Subbasin varies between two to five feet within grade during the winter season for areas within the Airport property. Sonoma County does not currently have a

²¹ Federal Aviation Administration, 1050.1F Desk Reference, Section 14.4 Groundwater. July 2015.

groundwater management plan. Groundwater is managed indirectly by Permit and Resource Management Department (PRMD) through well permits and by groundwater availability zones established in the General Plan.

B.13.5 Application of Treated Wastewater

Under an agreement between the Airport Sponsor and the Sonoma County Water Agency, treated wastewater from the wastewater treatment plant operated by the Sonoma County Water Agency is applied as irrigation water to the western and central portions of the Airport. The treated wastewater meets all State of California standards and contributes to the replenishment of groundwater in the Airport vicinity.

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