

1 Inventory

The WSP USA Team conducted an inventory of Felts Field’s facilities in October 2017 by reviewing the location, type, number, and general condition of each airport facility, which included the airfield, the terminal area, ground access, aircraft/vehicular parking, pavement conditions, utilities, and navigational aids (NAVAIDs). The collected information has been used throughout this master plan update to evaluate the airport’s capacity to accommodate future aircraft activity over a long-term planning period. The following nine sections in this chapter summarize the findings of the inventory:

- Airport History
- Existing Airport Conditions
- Physical Facilities
- Airspace and Airport Traffic Control Tower Conditions
- Utilities
- Airport Operations
- Local Land Use Plans and Regulations
- Environmental Considerations
- Navigational Aids

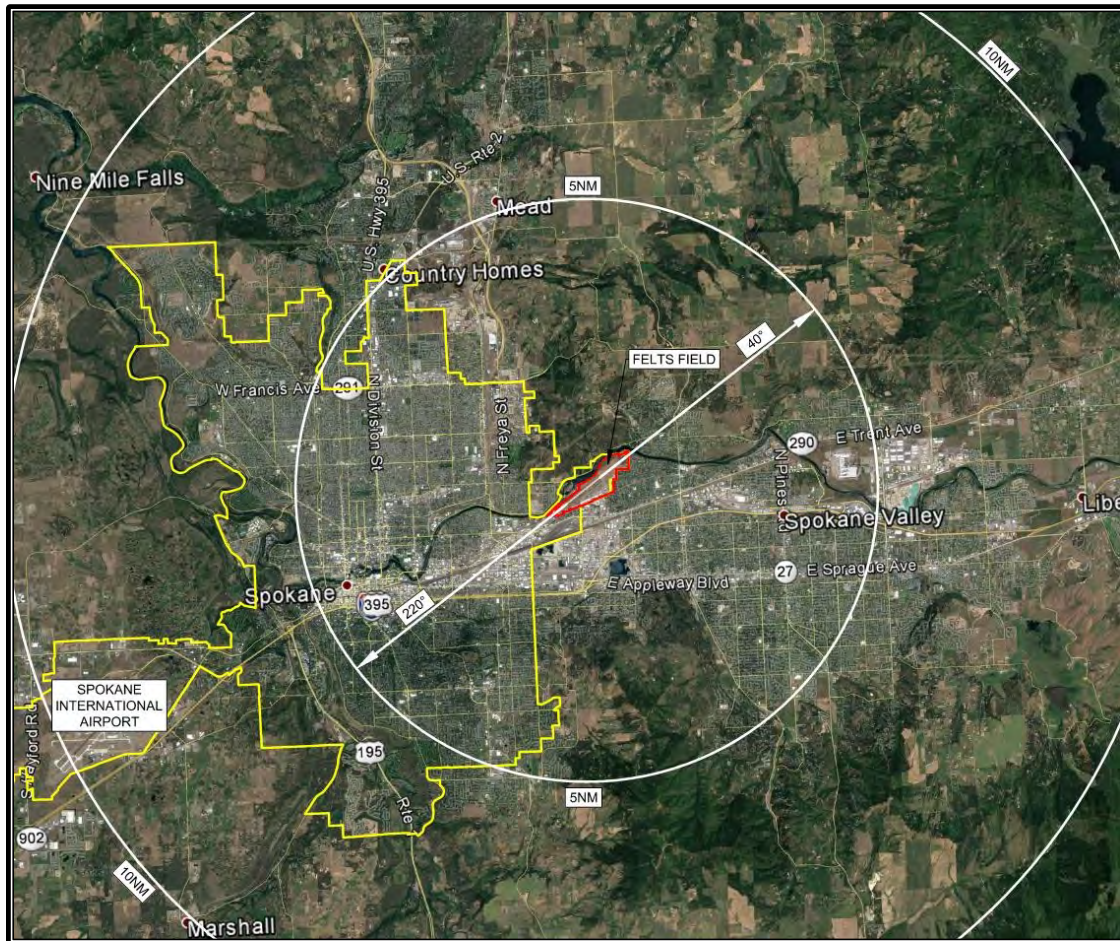
Chapter 4, “Alternatives Analysis” addresses any deficiencies identified during this evaluation.

1.1 AIRPORT HISTORY

The City of Spokane first developed Felts Field (known as Parkwater Field and Earl Hoisington Field) in 1920. In 1924, the Washington Air National Guard began operating at the facility. In 1927, the airport changed its name to Felts Field in honor of Lieutenant J. Buell Felts. In 1928, commercial flights began to Seattle, thus establishing the first commercial airport for the region. During World War II, the airport was utilized as a military training base, including for members of the Women’s Army Corps. In 1946, commercial flights were relocated to Geiger Field (now Spokane International Airport), and in 1949, the Washington Air National Guard was also relocated, leading to Felts Field’s continued development as a general aviation airport.

1.2 EXISTING AIRPORT CONDITIONS

Felts Field encompasses approximately 420 acres along the south shore of the Spokane River (**Figure 1-1**) with most of the airport within the Spokane city limits and approximately 10 acres of the southeast corner of the airport within the Spokane Valley city limits. The Spokane Airport Board—a municipal/cooperation formed through a joint operating agreement between the City and County of Spokane— is the airport sponsor and operates it. The Spokane Airport Board also operates the Spokane International Airport.

Figure 1-1. Felts Field Vicinity Map

Ground access to the airport is only fair because trains from a BNSF Railway rail line that runs along this road stop several times a day for crew changes and block at least one of the access points to the airport. Interstate 90 is approximately 1.5 miles by car south of the airport and provides access to the main airport entrance off of E. Rutter Avenue, which runs along its entire south boundary. **Figure 1-2** depicts the main roads around Felts Field.

The Federal Aviation Administration's (FAA) National Plan of Integrated Airport Systems (NPIAS) classifies Felts Field as a regional reliever airport. A regional airport serves a metropolitan area and a relatively large population, and a reliever airport supports and relieves congestion at a commercial service airport and provides general aviation access to a community. Felts Field is a reliever airport to Spokane International Airport. Of the 530 regional airports in the United States, 151 are reliever airports.

The Washington Department of Transportation (WSDOT) Aviation Division classifies Felts Field as a regional airport. The State of Washington categorizes airports based on an airport's function, services provided, and role in the state aviation system.

As identified in FAA *Advisory Circular 150/5300-13, Airport Design*, the previous Felts Field master plan applied planning standards associated with Airport Reference Code (ARC) D-II, which includes aircraft with approach speeds up to 166 knots with wingspans up to but not including 79 feet in width. The previous airport master plan used the Learjet 35 for approach speed and the Cessna Citation II for wingspan. Chapter 3, “Facility Requirements” discusses the design aircraft for this planning period.

1.3 PHYSICAL FACILITIES

Felts Field’s physical facilities are categorized into two types

- **Airside facilities** consist of runways, taxiways, runway approach areas, airfield lighting and signage, air traffic control tower (ATCT), terminal buildings, fixed-base operators (FBO), hangars, fuel facilities, visual aids and NAVAIDs.
- **Landside facilities** include vehicular parking areas, and other ancillary support facilities.

Figure 1-2 shows the existing airside. A description of both airside and landside facility types is provided in the following sections.

Figure 1-2. Felts Field Airside



1.3.1 Airside Facilities

Felts Field's airside facilities include the following:

- Runway 4L-22R—at 4,499 feet long and 140 feet wide—is the primary runway that has a true bearing of North 54° 11' 02.4" West and has a portland-cement concrete paved surface. Runway 4L has nonprecision instrument runway markings that delineate the runway threshold, the runway centerline, the pavement edge, and the runway designation. Runway 22R has precision instrument runway markings that delineate the runway threshold, the aiming point, the touchdown zone, the runway centerline, the pavement edge, and the runway designation.
- Runway 4R-22L—at 2,650 feet long and 75 feet wide—is an additional runway that has a true bearing of North 54° 12' 3.6" West and has a hot-mix-asphalt paved surface. Runway 4R-22L has visual runway markings that delineate a blast pad and threshold bar on the Runway 4R end, the runway centerline, and the runway designation.
- The alternative turf landing area is 1,700 feet long and 60 feet wide and is north of Runway 4R-22L. The turf landing area includes white markers delineating the threshold and north edge of the strip.
- Waterway 3W-21W is 6,000 feet long and 100 feet wide and is off airport property on the Spokane River. The Spokane Airport Board does not maintain this waterway.

The existing runway pavement strength as published in the U.S. Government Flight Information Publication Airport/Facility Directory for Felts Field is 30,000 pounds single-wheel. No strength is listed for dual-wheel or tandem aircraft. **Table 1-1** depicts Felts Fields runway end information.

Table 1-1. Runway End Information

RUNWAY	ELEVATION (Above Mean Sea Level)	LONGITUDE	LATITUDE
4L	1,946.4 feet	117° 19' 52.979"	47° 40' 45.126"
22R	1,956.5 feet	117° 18' 53.135"	47° 41' 14.283"
4R	1,950.3 feet	117° 19' 26.906"	47° 40' 51.754"
22L	1,953.4 feet	117° 18' 55.565"	47° 41' 07.012"

Runway 4R-22L does not have edge lighting but does have a four-light precision approach path indicator (PAPI) on the Runway 22L end with a 3.8° glide slope and threshold crossing height of 42 feet above ground level (AGL). The existing Felts Field reference point is at 47° 40' 58.5860" North and 117° 19' 20.7340" West. The published airport elevation is 1,956.7 feet above mean sea level. Magnetic variation affects Felts Field by approximately 8 minutes per year, resulting in a 14° 34' East difference between true north and magnetic north for year 2017.

In **Figure 1-3**, Felts Field operates under a right-handed traffic pattern during Visual Flight Rule (VFR) conditions for Runways 4R and 22R. Felts Field has one segmented circle with an illuminated windsock on the north side of Runway 4L-22R. An Automated Surface Observing System (ASOS) just east of the segmented circle on the north side of Runway 4L-22R provides weather information to pilots. The ASOS

provides current wind speed, wind gusts, altimeter readings, temperature, dew point, visibility, precipitation, cloud height, sky condition, and density altitude. Felts Field ASOS information can be accessed 24/7 via the telephone at (509) 535-3290. The information is also broadcast over the ATCT radio frequency when the ATCT is closed.

Taxiways A, C, and D, and Taxilane A connect to and support Runway 4L-22R. As shown in **Figure 1-4**, Taxiway A reverts to Taxilane A at the nonmovement area markings and provides full-length, nonparallel access that loops through the terminal area on the south side of Runway 4L-22R. The combined Taxiway A and Taxilane A is 6,063 feet long by 35 feet in width. Taxiways C and D are each 50 feet wide and connect Runway 4L-22R with Taxiway A. Taxiway A is the primary access to all landside facilities and the airport's hangar complexes.

Taxiways E, D, and A connect to Runway 4R-22L and a full-length, parallel Taxiway B. Taxiway D is near the midpoint of Runway 4R-22L with Taxiways E and A at each runway threshold. Taxiway E is 35 feet wide and Taxiway B is 40 feet wide.

National Climatic Data Center (NCDC) provided information regarding meteorological considerations for Felts Field from data NCDC collected from the airport's ASOS. Observations for Felts Field were taken from 2007 through 2017, which were then used to develop the visual and instrument meteorological condition wind roses for the airport. The wind rose analysis indicates that the existing runway configuration provides 99.96% coverage for a crosswind component of 16 knots. The 16-knot crosswind component applies to ARC D-II. The percentage of wind coverage provided for the parallel runways meets the FAA's recommendation of 95% crosswind coverage. No crosswind runway is required.

According to data provided by the NCDC, visual meteorological weather conditions (VMCs) occur 84% of the time, whereas instrument meteorological weather conditions (IMCs) occur approximately 16% of the time. IMCs are classified as any weather conditions where cloud ceilings are less than 1,000 feet AGL and/or visibility is less than 3 miles. With Felts Field, a cloud ceiling of less than 1,000 feet AGL happens more often than visibility of less than 3 miles and typically occurs more than 5% of the time from October through March. The Instrument Landing System (ILS) Runway 22R has the lowest approach procedure with an A/B minimum of 300 feet AGL and visibility of 0.75 mile.

Figure 1-3. Felts Field Flight Information

SPOKANE

FELTS FLD (SFF)(KSFF) 4 NE UTC-8(-7DT) N47°40.98' W117°19.35'

SEATTLE

1957 B LRA NOTAM FILE SFF

L-13B

RWY 04L-22R: H4499X140 (CONC) S-30 MIRL

IAP, AD

RWY 04L: REIL. VASI(V2L)—GA 3.0° TCH 50'. Road.

RWY 22R: MALSR. VASI(V2R)—GA 3.5° TCH 44'. Tree. Rgt tfc.

RWY 04R-22L: H2650X75 (ASPH) S-30

RWY 04R: Rgt tfc.

RWY 22L: PAPI(P4L)—GA 3.8° TCH 39'. Trees.

RUNWAY DECLARED DISTANCE INFORMATION

RWY 04L:TORA-4499 TODA-4499 ASDA-4499 LDA-4499

RWY 04R:TORA-2650 TODA-2650 ASDA-2650 LDA-2650

RWY 22L:TORA-2650 TODA-2650 ASDA-2650 LDA-2650

RWY 22R:TORA-4499 TODA-4499 ASDA-4499 LDA-4499

SERVICE: S4 FUEL 100LL, JET A1+ OX 3, 4 LGT When twr clsd

ACTIVATE MIRL Rwy 04L-22R, MALSR Rwy 22R and REIL 04L-CTAF.

VASI Rwy 04L and VASI Rwy 22R opr continuously. PAPI Rwy 22L opr

SR-SS. Rwy 22L PAPI unusable byd 5° right side of cntrl.

AIRPORT REMARKS: Attended 1400-0400Z†. Waterfowl and birds on and

invof arpt. Lgtd crane 1953' MSL (200' AGL) 1.25 NM east indef. Acft

with tail heights over 20' must ctc twr prior to taxi. Twr unable to

provide ATC svc on perimeter twy due to movement of unctl gnd tfc.

Portions of Twy B not visible from twr. PPR for rotorwing acft conducting

hover ops above 10' AGL in non-movement area ctc twr. Cold temperature airport. Altitude correction required at or below

-16C. Flight Notification Service (ADCUS) avbl.

AIRPORT MANAGER: 509-455-6419

WEATHER DATA SOURCES: ASOS 120.55 (509) 535-3290.

COMMUNICATIONS: CTAF 132.5 ATIS 120.55 UNICOM 122.95

SPOKANE RCO 122.55 (SEATTLE RADIO)

® SPOKANE APP/DEP CON 133.35

TOWER 132.5 (1400-0400Z†) GND CON 121.7 CLNC DEL 121.7

CLEARANCE DELIVERY PHONE: For CD if una to ctc on FSS freq, ctc Seattle ARTCC at 253-351-3694.

AIRSPACE: CLASS D svc 1400-0400Z†; other times CLASS E.

VOR TEST FACILITY (VOT) 114.0

RADIO AIDS TO NAVIGATION: NOTAM FILE GEG.

SPOKANE (H) VORTACW 115.5 GEG Chan 102 N47°33.90' W117°37.61' 039° 14.2 NM to fld. 2756/21E.

VOR portion unusable:

300°-330° byd 30 NM blo 9,000'

335°-360° byd 18 NM blo 7,000'

335°-360° byd 25 NM

360°-015° byd 26 NM blo 7,000'

ILS/DME 111.7 I-FLZ Chan 54 Rwy 22R. Class IB. LOC unusable 0.2 NM fm rwy thld. DME unusable 15° rgt of course.

COMM/NAV/WEATHER REMARKS: Emerg frequency 121.5 not avbl at twr.

WATERWAY 03W-21W: 6000X100 (WATER)

WATERWAY 21W: Rgt tfc.

SEAPLANE REMARKS: Extv boating in area of water rwy. Water lvl on river may be lwr by corps of engr. Water area adj to arpt not ctdid or mntnd by arpt. Waterway elev 1910 estd. Waterway 03W-21W water rwy advsy svc only area not visible from twr. Ctc Felts twr 132.5 for tfc data.

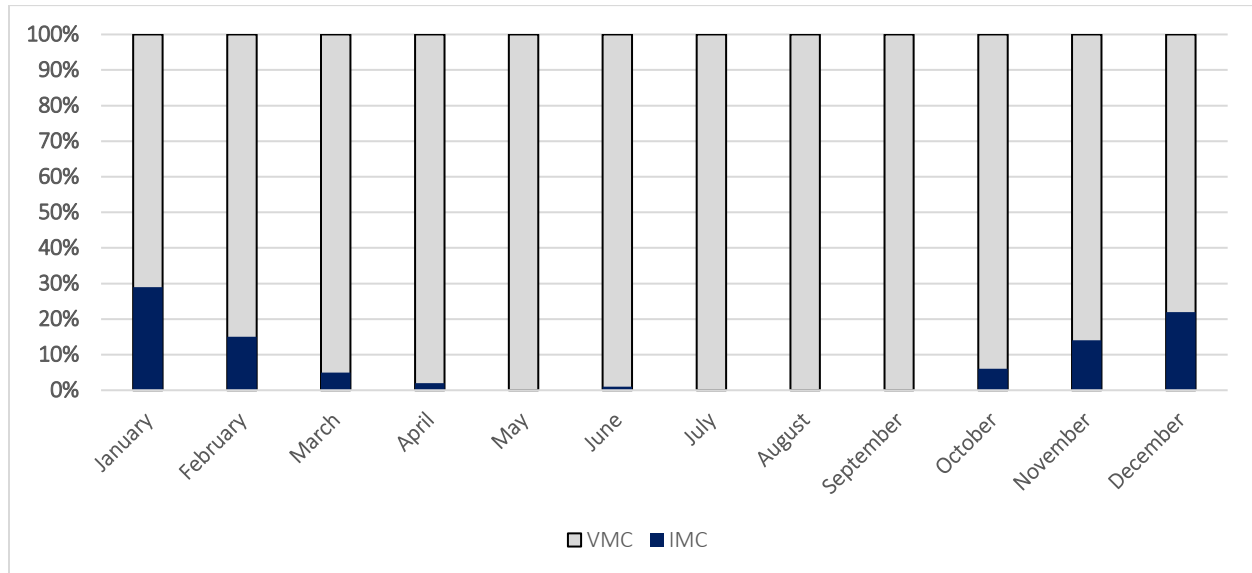


Source: FAA Chart Supplement Northwest U.S., 5 NOV 2020 to 31 DEC 2020

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These minimums are exceeded for approximately 6% of the year. **Figure 1-5** provides a historical record of IMC and VMC percentages by months of the year.

Figure 1-5. Instrument Meteorological Weather Conditions versus Visual Meteorological Weather Conditions (Historical Occurrences, 2007–2017)



Source: NCDC Data 2007–2017

Felts Field’s airport reference temperature, which is defined as the mean maximum temperature of the hottest month of the year, is 85.4 degrees and occurs during July. This temperature is based on historical data collected from the ASOS on the airport and the climate normal published by the NCDC. The average total annual rainfall is approximately 16 inches per year.

Felts Field aircraft parking aprons are conveniently located along Taxilane A. As of November 2020, the aircraft parking aprons accommodate 68 aircraft in tie-down positions. Of the 68 tie-downs, the FBO manages and operates 36, with the remaining tie-downs leased to individual airport tenants for private use. Three privately owned float plane docks are on the Spokane River along with a launch ramp for the water runway. Transient aircraft use aprons on both the north and south sides of Taxilane A. Taxilane A’s north side apron, which the FBO manages, provides 8,700 square yards of apron space. Taxilane A’s south side apron, which is leased to either the FBO or private airport tenants, provides approximately 59,200 square yards of available apron space. All aircraft parking aprons are funded by AIP. They are allocated as public use areas and are non-exclusive.

The terminal building—which houses a pilots’ lounge, restaurant, and public restrooms, including free Wi-Fi, public phones, and equipment room—is south of the midpoint of Taxilane A. The terminal building is approximately 4,400 square feet.

Felts Field has 75 aircraft hangars along with an assortment of maintenance, office, and support structures.

The airport has one FBO. Western Aviation is a full-service FBO on the south side of the airport along E. Rutter Avenue and is adjacent to one of the large tie-down aprons. Western Aviation has been operating since 1974 and provides pilots with supplies, avionics sales, aircraft maintenance, fuel, aircraft tie-downs, rental cars, hangar space, and a pilot’s lounge.

Felts Field has one public fuel facility, managed by Western Aviation. This fuel facility opened in 2018. The fuel facility complex is on the island between Taxiway A, Taxiway B, and Taxiway D. The site features an upgraded fueling system that includes two above-ground, double-walled 15,000 gallon storage tanks, self-serve fuel dispensing pumps, refueler parking, and a fuel delivery service area. The two fuel tanks store Jet A and 100LL (low lead) fuel while the plumbing for a third tank is present and will be installed when demand warrants. All facilities are in excellent condition and have leakage detection equipment. The fuel storage capacity is adequate for existing demand. In addition to the public fuel facilities, several airport tenants have private, underground fuel facilities and fuel trucks.

The following other major tenants of the airport do not fit the category of an FBO; however, they do play an important part in the airport’s overall system:

- Felts Field Aviation (specializes in charter flights and has operated at Felts Field for 40 years)
- Historic Flight Foundation
- Moody Aviation (specializes in flight and airport mechanic training for missionary services)
- Spokane Community College (specializes in aviation maintenance training)
- Eagle Helicopters (provides helicopter firefighting, sightseeing, aerial photography, and charters)
- Spokane Turbine Center (provides flight training for missionary pilots)
- Northwest Flight School (specializes in flight training and aircraft rentals)
- Rocket Engineering (specializes in aircraft modifications)

1.3.2 Landside Facilities

Landside facilities at Felts Field include roads, vehicular parking, and a restaurant. The airport has two main access points:

- Western access via N. Fancher Road (the primary access)
- Eastern access via N. Park Road to E. Rutter Avenue

As explained earlier, trains run along E. Rutter Avenue and stop several times a day for crew changes and block the eastern or western access to the airport. Some general aviation hangars are accessed via automated vehicle gates. **Figure 1-4** depicts the Felts Field’s landside facilities and vehicular access ways.

Vehicular parking at Felts Field consists of 525 spaces. The following lists spaces by facility:

- Terminal Building 150 spaces
- Spokane Community College67 spaces
- Spokane Turbine Center53 spaces
- Historic Flight Foundation.....64 spaces

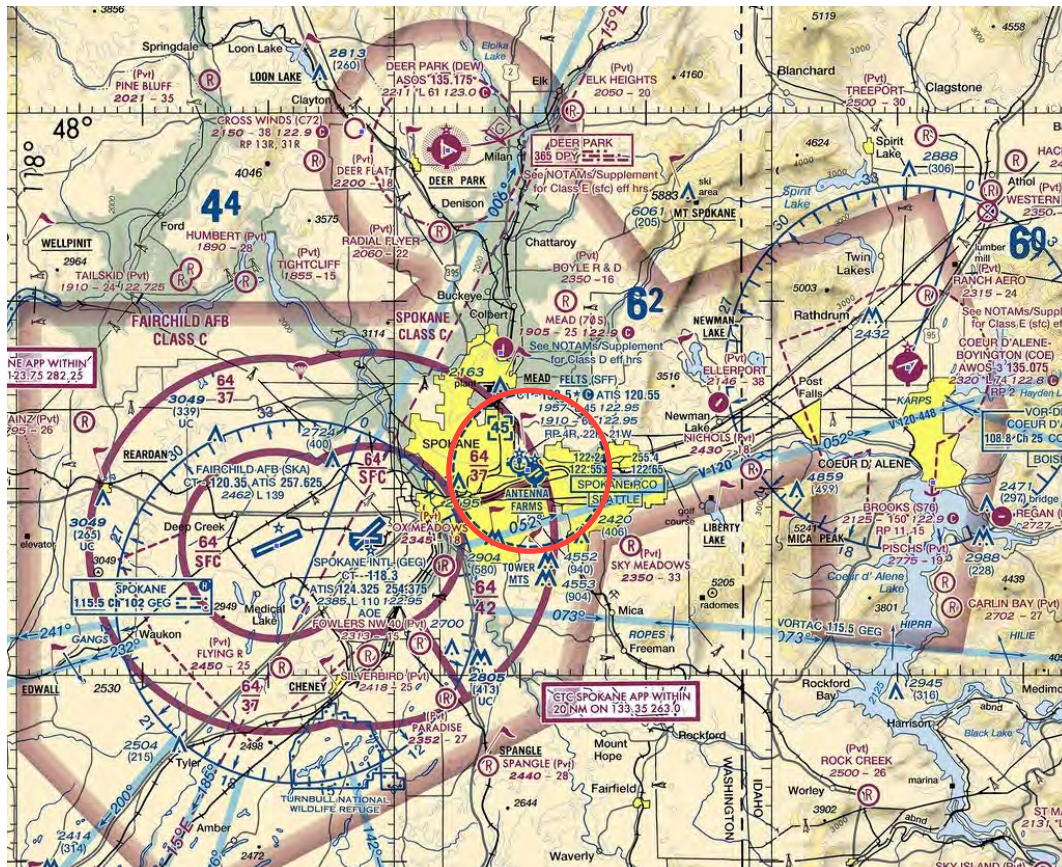
- Moody Aviation..... 49 spaces (inside fence)
- Western Aviation35 spaces
- Honor Point Military & Aerospace Museum33 spaces
- Hangar 15 LLC..... 10 spaces (inside fence)
- Airport Snow Removal Equipment Building 11 spaces (inside fence)
- Rocket Engineering 26 spaces (inside fence)
- Gate 1 Access Road..... 24 spaces (inside fence)
- Gate 5 Access Road..... 3 spaces (inside fence)

Aircraft owners and employees also park their vehicles in their T-Hangars, on aprons and gravel areas, and along E. Rutter Avenue for convenience.

1.4 AIRSPACE AND AIRPORT TRAFFIC CONTROL TOWER CONDITIONS

The airspace surrounding Felts Field encompasses neighboring airports, NAVAIDs, and en route airways. Figure 1-6 displays the airports and en route airways within a 25-nautical-mile radius.

Figure 1-6. Felts Field Airspace Map



Source: Federal Aviation Administration, 2020

Five airports are within 25 nautical miles of the airport. **Table 1-2** generally describes these private- and public-use airports.

Table 1-2. Airports within 25 Nautical Miles of Felts Field

AIRPORT	OWNERSHIP	DISTANCE FROM FELTS FIELD (Nautical Miles)	RUNWAYS	RUNWAY SURFACE	FUEL	BASED AIRCRAFT	HANGARS	ATCT
Mead Flying Service	Private	6 north	Rwy 16-34 (2,481 feet)	Asphalt	No	18	14	No
Spokane Int. Airport	Public	9 west	Rwy 3-21 (11,002 feet)	Asphalt/Concrete	100, 100LL, Jet A	76	11	Yes
			Rwy 7-25 (8,199 feet)	Asphalt				
Fairchild Air Force Base	U.S. Air Force	14 west	Rwy 5-23 (13,900 feet)	Concrete	Unknown	Unknown	Unknown	Yes
Deer Park	Public	18 north	Rwy 16-34 (6,100 feet)	Asphalt	100LL, Jet A	105	43	No
			Rwy 5-23 (3,200 feet)	Asphalt				
Coeur d'Alene Airport	Public	21 east	Rwy 6-24 (7,400 feet)	Asphalt	100, Jet A	Unknown	Unknown	No

There are two categories of airspace: regulatory and non-regulatory. Regulatory airspace consists of restricted, prohibited and various classes (Class A, B, C, D, and E) airspace. Non-regulatory airspace includes military operations areas (MOAs), warning areas, alert areas, and controlled firing areas where FAA does not make regulatory enforcement due to special (military) operations. Within these two categories of airspace, there are four types: controlled, uncontrolled, special use, and other airspace. The categories of airspace are dictated by the complexity or density of aircraft movements, the nature of the operations conducted with the airspace, the level of safety required, and the national and public interest.

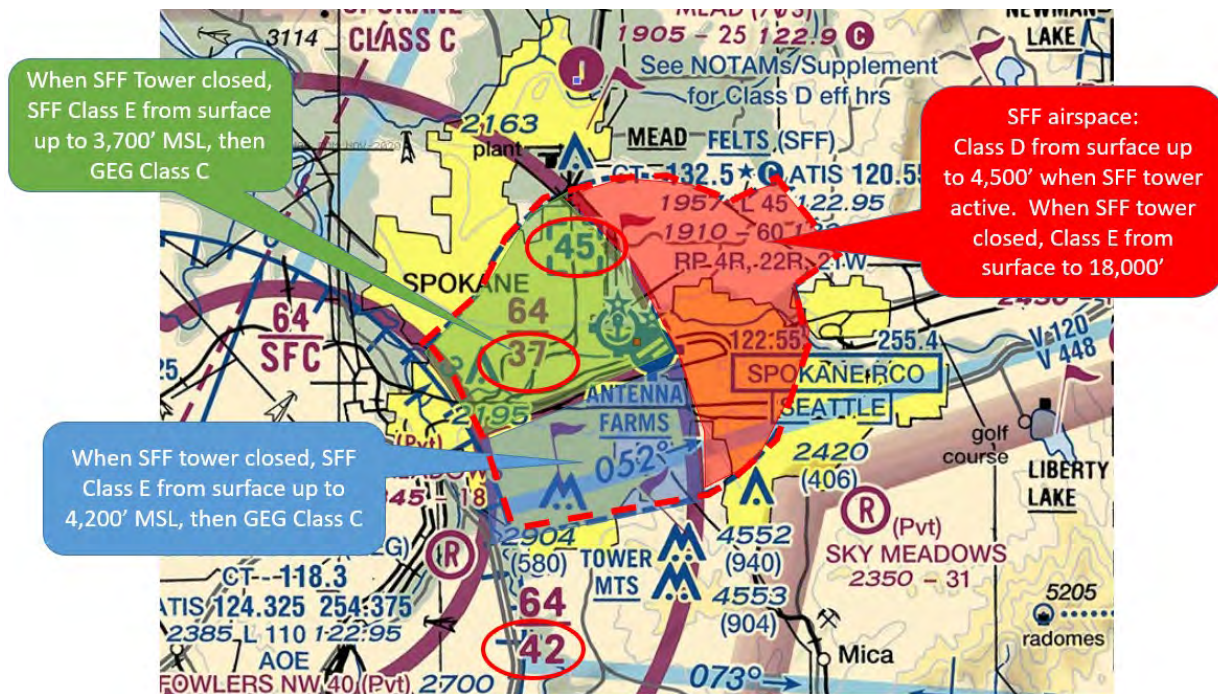
The following classes of airspace surround Felts Field:

- Class C airspace surrounds airports with an ATCT and is serviced by radar approach control. Class C airspace is developed according to airport-specific conditions and typically has two layers of control. Pilots entering Class C airspace must have two-way radio contact with the ATCT and maintain contact throughout Class C airspace. Within Class C airspace, air traffic controllers must separate VFR aircraft from one another but not Instrument Flight Rule (IFR) traffic. Felts Field is beneath the Class C airspace of Spokane International Airport and Fairchild Air Force Base.
- Class D airspace is circular in form and normally extends from the ground surface to 2,500 feet AGL and to a variable radius (generally 5 statute miles) around airports with an operational ATCT and not otherwise in Class C or Class B airspace. Felts Field has an ATCT that operates from 6:00 a.m. to

8:00 a.m. Pacific Standard Time; therefore, the airport's airspace is Class D. Two-way communication with ATC must be established before entering Class D airspace; however, no transponder is required.

- Class E airspace is less restrictive than Class A, Class B, and Class C. Throughout much of the United States, Class E airspace extends from 1,200 feet AGL up to 18,000 feet mean sea level, which is the lower limit of Class A airspace. Class E airspace can begin at either the surface or 700 AGL, which are used to transition to and from terminal or en route environments. Class E airspace VFR visibility requirements are the same as they are for Class C and Class D airspace. Felts Field's Class D airspace reverts to Class E airspace when the ATCT is closed or during special conditions. **Figure 1-7** depicts the different limits of Class E airspace at Felts Field. The portion of the Felts Field's airspace that is below the Spokane International Airport Class C airspace has a ceiling of either 3,700 feet above mean sea level or 4,200 feet above mean sea level (blue and green areas). The rest of the airspace (red area) goes up to 4,500 feet, then becomes Class E airspace to 18,000 feet mean sea level.

Figure 1-7. Felts Field Class E Airspace Map



Source: Federal Aviation Administration, 2020

- Class G airspace is airspace not otherwise classified, below flight level 600 (FL 600). There are no entry or clearance requirements for Class G airspace, even for IFR operations. Class G airspace typically starts near the ground (1,200 feet or less) and lies under Class E airspace.

Other types of airspace include controlled and restricted MOAs, which require pilots to obtain authorization before entering the airspace. A controlled airspace is regulatory and may include one or more airports. Controlled airspaces are typically circular and have a radius of 5 statute miles. As discussed, several controlled and restricted, special use airspace areas are within 25 nautical miles of Felts Field. MOAs have

defined vertical and lateral dimensions, which separate certain military activities from IFR traffic, and indicate to VFR traffic where these activities are conducted. Felts Field contains no restricted airspaces or MOAs in its vicinity.

Felts Field has three Instrument Approach Procedures (IAPs), which are all associated with Runway 4L-22R. These procedures are classified as nonprecision instrument approaches with visibility minimums greater than 0.75 mile. IAPs are predetermined maneuvers for an aircraft to transition from IFR conditions from the beginning of the initial approach to a point where a landing may be made visually. These procedures provide a specific clearance over obstacles that could otherwise jeopardize aircraft landings. For comparison, a precision instrument approach uses an electronic glideslope to provide the pilot with a glide path or specific descent profile guidance. A nonprecision approach provides lateral guidance but no vertical guidance. Felts Field has a glideslope, however, the instrument approach is nonprecision based on the published minima. **Table 1-3** provides the IAPs and NAVAIDs for Felts Field.

Table 1-3. Felts Field Instrument Approach Procedures (Straight In)

NAVAID	LOCATION	LOWEST MINIMA
Instrument Landing System (ILS) or Localizer (LOC) Runway 22R	On-Airport	300 feet/0.75 mile
Area Navigation (RNAV) (GPS) Runway 04L	On-Airport	300 feet/1 mile
VHF Omnidirectional Range (VOR) Runway 04L	Spokane International	1,100 feet/1.25 miles

Figures 1-8 through 1-10 depict the approach procedures available at Felts Field.

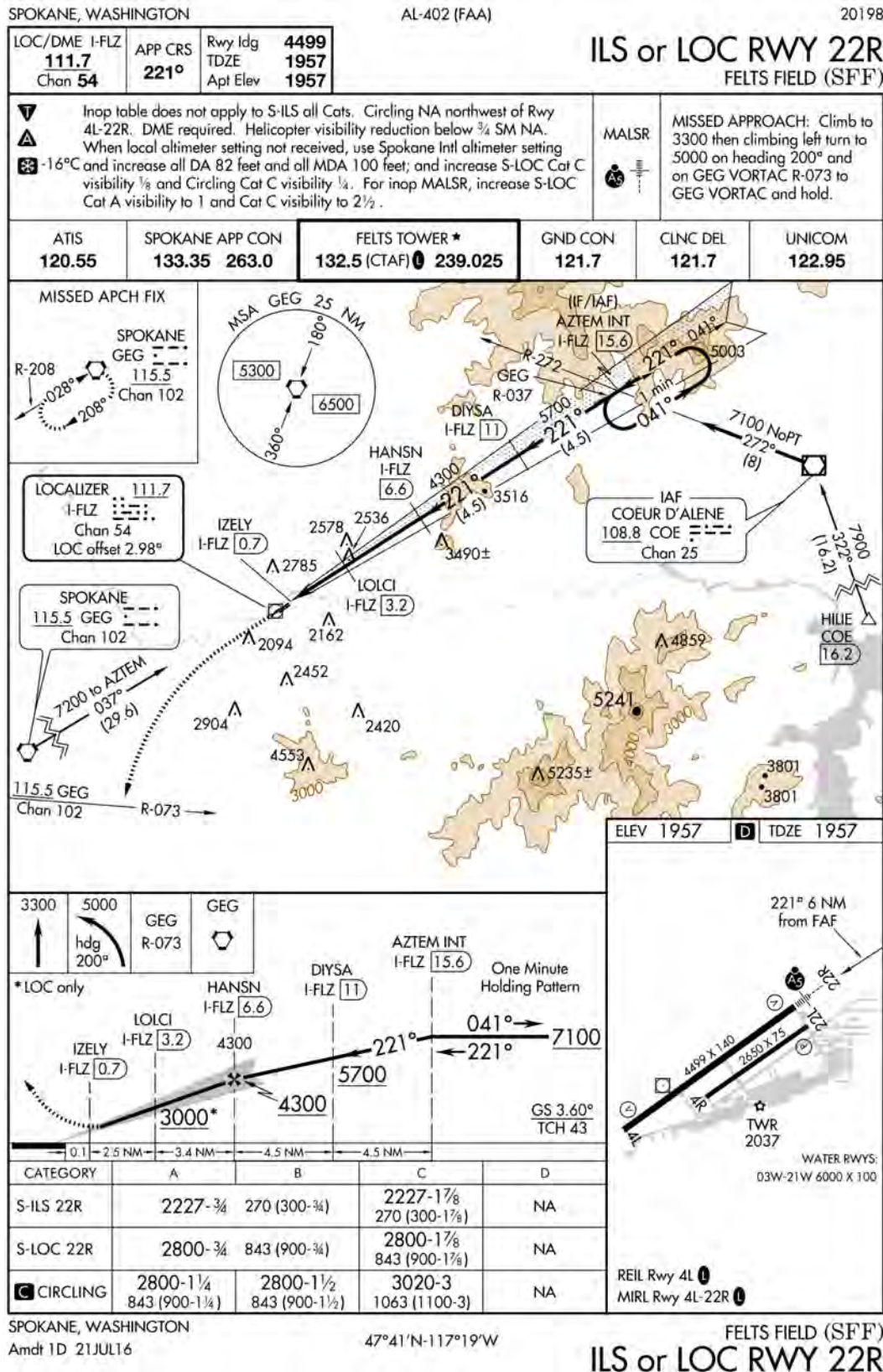
1.5 UTILITIES

Two water districts serve Felts Field—one in Spokane and the other in Orchard Avenue Irrigation District—and both provide domestic water, irrigation, and fire protection to portions of the airport. The City of Spokane serves most of the airport through water mains accessing the airport along E. Rutter Avenue. Service from Orchard Avenue accesses the airport from a 6-inch water main under Dora Road and is limited to a few hangars in the southeast corner of the airport inside the city of Spokane Valley.

The City of Spokane provides sanitary sewer services to the entire airport via a 6-inch gravity sewer main under N. Dora Road and an 8-inch gravity sewer main under N. Coleman Road along the eastern boundary of the airport. A 10-inch gravity sewer main runs along the south boundary under E. Rutter Avenue.

Avista Utilities delivers natural gas and power to the airport through multiple main lines under E. Rutter Avenue, N. Dora Road, and N. Coleman Road. A 2-inch high-pressure gas main and overhead power line cross both E. Rutter Avenue and N. Dora Road. Century Link provides telephone service to Felts Field using communication lines along E. Rutter Avenue.

Figure 1-8. Felts Field Approach Procedures: Instrument Landing System or Localizer to Runway 22R



SPOKANE, WASHINGTON	AL-402 (FAA)	20198
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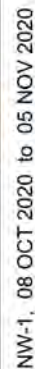
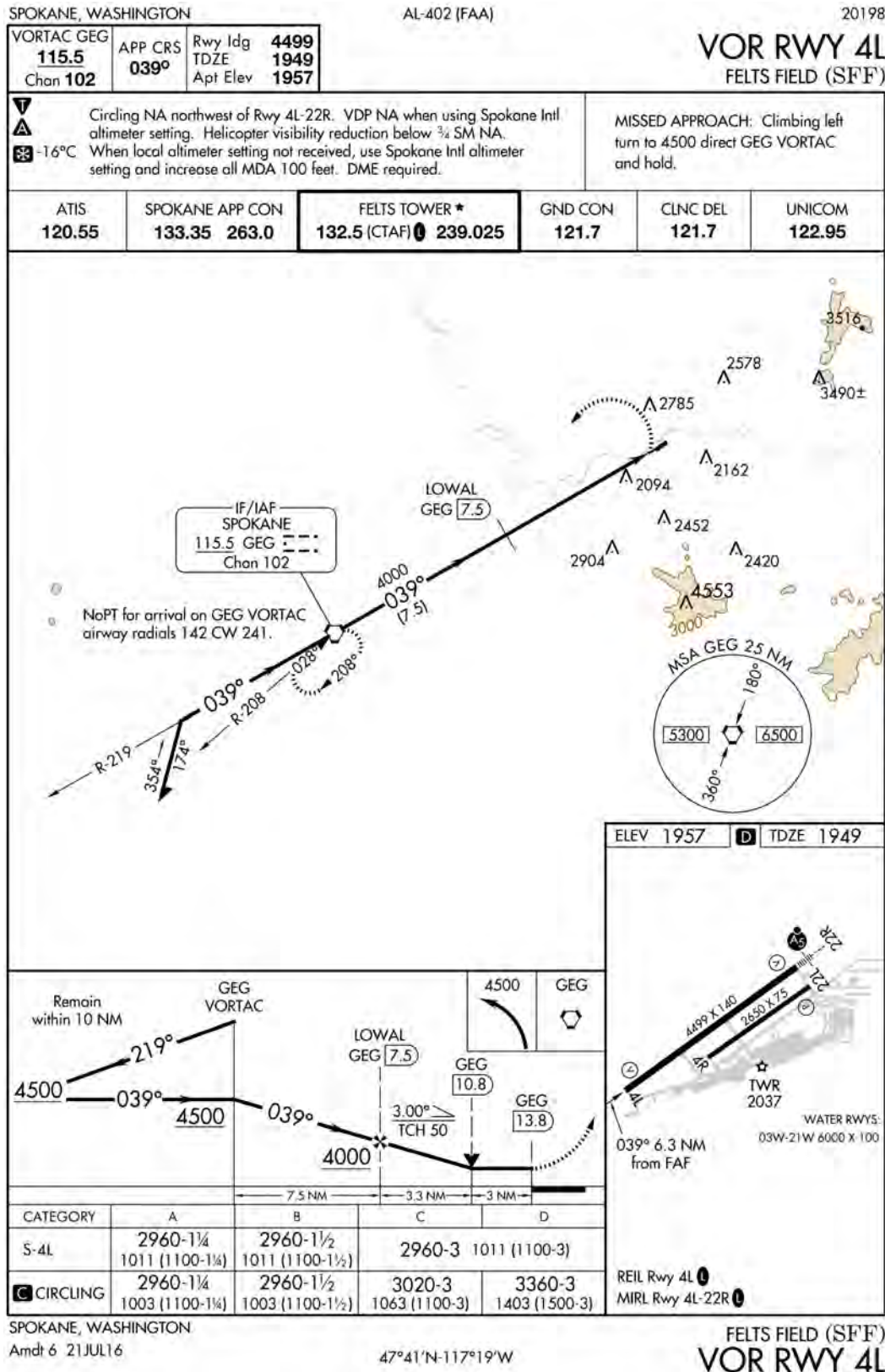


Figure 1-10. Felts Field Approach Procedures: VHF Omnidirectional Range (VOR) Runway 4L



1.6 AIRPORT OPERATIONS

Since the previous Felts Field Master Plan Update was conducted in 2005, general aviation operations have declined at the airport along with related activities that include aircraft sales and certification of new pilots until 2015, but have increased a little since. During this same time period, aircraft operations/maintenance costs have also increased. This trend follows national general aviation for nearly a 10-year period. Corporate and business aviation have experienced slight increases in growth over the same period. Fractional ownership and corporate flying continue to increase because the on-demand charter industry serves as a feasible alternative to companies owning their own aircraft. Chapter 2.0, “Aviation Forecasts” summarizes historical activities at Felts Field. These activities include the number of annual based aircraft and aircraft operations.

A based aircraft is defined as one that is permanently stationed at an airport. To determine the number of based aircraft at Felts Field, the following FAA documents were reviewed: the Terminal Area Forecast (TAF) and the FAA Form 5010-1 of the National Based Aircraft Inventory Program; airport management was also consulted. The number of based aircraft at Felts Field has increased from 149 in 2008 to approximately 180 in 2017. Chapter 2.0, “Aviation Forecasts” provides a detailed discussion and table depicting the annual number of historical based aircraft.

The number of aircraft operations, defined as either a takeoff or landing, has also declined since the 2005 master plan. In 2005, Felts Field accommodated approximately 68,650 aircraft operations. By 2015, Felts Field operations had declined to approximately 55,000 annually. Aircraft operations are classified as either local or itinerant. A local operation is conducted by an aircraft operating in the local traffic pattern, known to be departing or arriving from flights in local practice areas within a 20-mile radius of the airport, and/or executing a simulated instrument approach or low pass at the airport. An itinerant operation does not include the characteristics of a local operation. Chapter 2.0, “Aviation Forecasts” discusses the historical and the anticipated future aircraft operations for Felts Field.

1.7 LOCAL LAND USE PLANS AND REGULATIONS

Both the City and County of Spokane and the City of Spokane Valley have adopted zoning and regulations regarding land use compatibility surrounding public airports. In 1996, the Washington Legislature passed land use legislation (RCW 36.70A.510, RCW 36.70.547) also known as the Growth Management Act (GMA). Under this provision of the GMA, all towns, cities and counties must discourage encroachment of incompatible development adjacent to public-use airports by adopting comprehensive plan policies and development regulations. The GMA also identifies airports as essential public facilities. The WSDOT Aviation Division has developed the Airport Land Use Compatibility Program to provide guidelines and technical assistance for communities and planning agencies to use in order to limit incompatible land use in an around airports and meet the program’s requirements.

The Spokane Airport Board has multiple interlocal agreements in accordance with RCW 39.34, which permits a local government to enter interlocal agreements with other public agencies in the interest of cooperatively sharing resources for their mutual benefit. The Spokane Airport Board has interlocal agreements with the following:

- Washington Department of Enterprise Services (2013)
- Western States Contracting Alliance (2013)
- King County Director's Assoc. (2012)
- Fire Rescue GPO (2012)
- Houston Galveston Area Council (2012)
- Minnesota Materials Management Co-Op (2012)
- City and County of Denver (2012)
- Spokane County, Department of Purchasing (2013)
- US Communities (2012)
- National Intergovernmental Purchasing Alliance (2012)
- National Joint Powers Alliance (2013)

Two recreational facilities are adjacent to the airport:

- Orchard Avenue Park, 4-acre ballpark with recreational facility at the corner of Park Road and Bridgeport Avenue. The park is only allowed under specific circumstances in the FAA approved concurrent use agreement.
- Gonzaga Crew rowing facility, along the shore of the Spokane River. This facility is allowed under the FAA approved interim use agreement.

Felts Field and vicinity land uses are designated by the following:

- *City of Spokane Comprehensive Plan* (adopted May 2001, revised June 2017)
- *City of Spokane Valley Comprehensive Plan* (adopted December 2016)
- *Spokane County Zoning Code* (adopted May 2004, revised January 2016)
- *City of Millwood Comprehensive Plan* (adopted November 2009, revised February 2015).

Land surrounding Felts Field consists of a mix of undeveloped wooded areas, high- and low-density residential, and commercial and industrial parcels. The industrial areas are primarily south of the airport and are accessible by BNSF Railway, which runs parallel to E. Rutter Avenue. The Upriver Hydroelectric Dam, which is served by a large power station run by Avista Utilities on the north side of the river, is directly west of the airport on the Spokane River. A portion of the northern airport boundary is adjacent to a firearms practice range operated by the City of Spokane Police Department.

The City of Spokane controls most of the land area southwest of the airport and has zoned the land as either light industrial (LI) or heavy industrial (HI). A small section directly south of the airport is zoned general commercial (GC) and residential single-family (RSF). This RSF area also includes parcels utilized by the U.S. Department of Housing and Urban Development. Land north of the Spokane River near the airport

and under the jurisdiction of the City of Spokane is zoned primarily as RSF, residential two-family (RTF), or residential multifamily (RMF). The City of Spokane's Comprehensive Plan has also established airport overlay zones for Felts Field. **Figure 1-11** depicts the current City of Spokane Land Use Designations in and around Felts Field.

Spokane County primarily controls the land area directly north and northwest of Felts Field across the Spokane River. This land comprises residential zones ranging from low to medium to high densities. **Figure 1-12** refers to the Spokane County Comprehensive Plan Zoning Map near Felts Field.

The City of Spokane Valley controls the land area directly east and south of Felts Field, and the land is zoned as mostly single-family residential (R2, R3) and the area south of the airport as industrial (I). A small portion of the areas southeast are designated as multifamily (MF) and industrial mixed use (IMF). **Figure 1-13** refers to the City of Spokane Valley Land Use Designations.

Millwood is a small municipality to the east of Felts Field. While not directly connected to Felts Field, Millwood is near and includes an airport compatibility zone across the western portions of the city limits. Millwood comprises a mix of residential, commercial, and industrial zones. **Figure 1-14** refers to the Millwood Zoning designations.

Figure 1-11. City of Spokane Zoning Map Excerpt

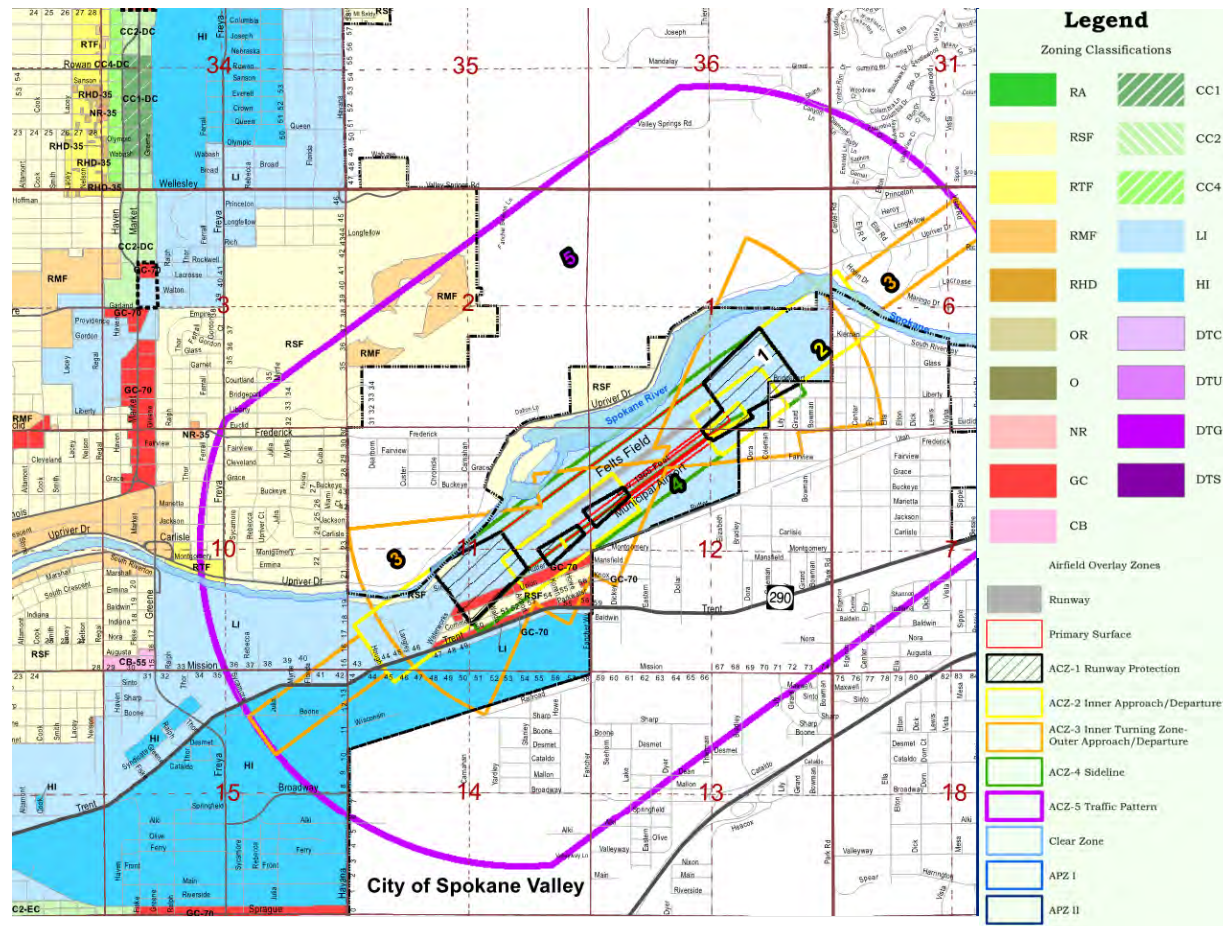


Figure 1-12. Spokane County Zoning Map Excerpt

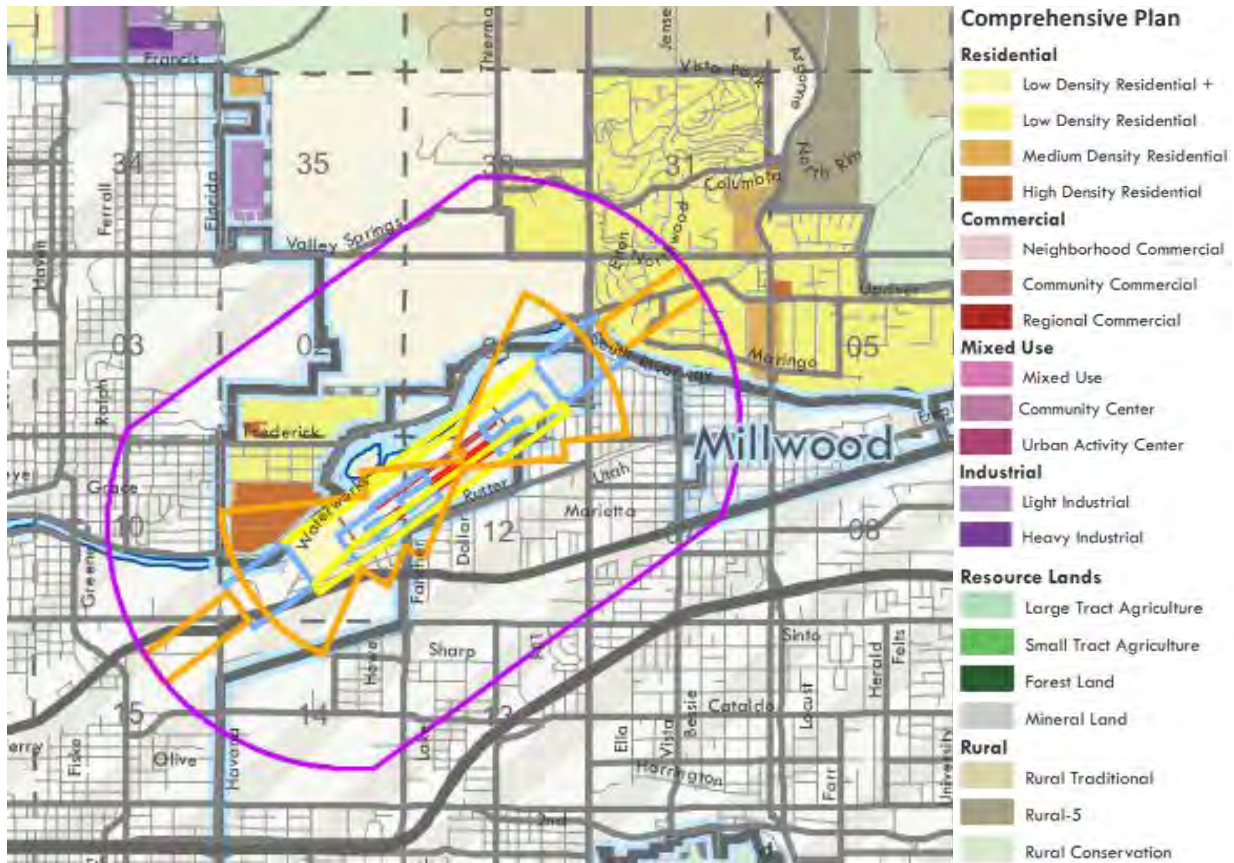


Figure 1-13. Spokane Valley Zoning Map Excerpt

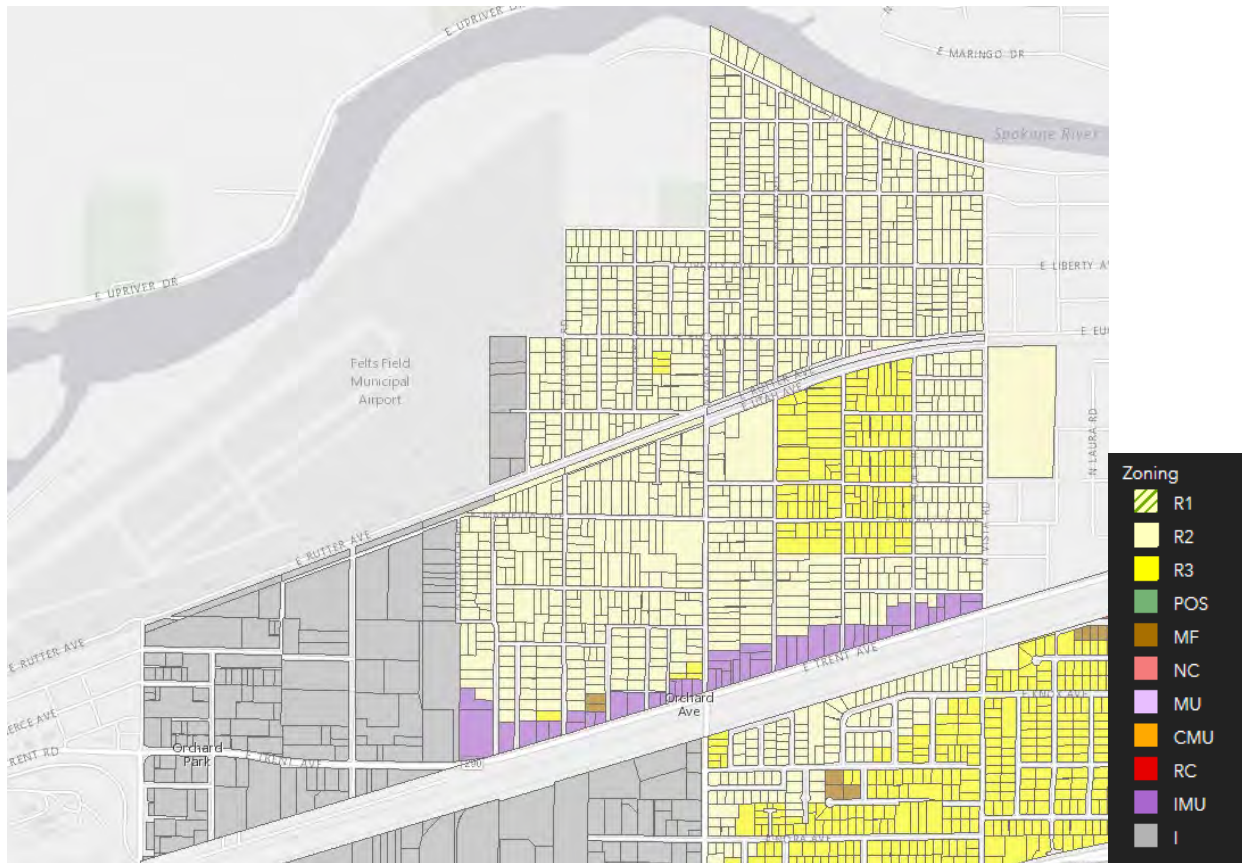
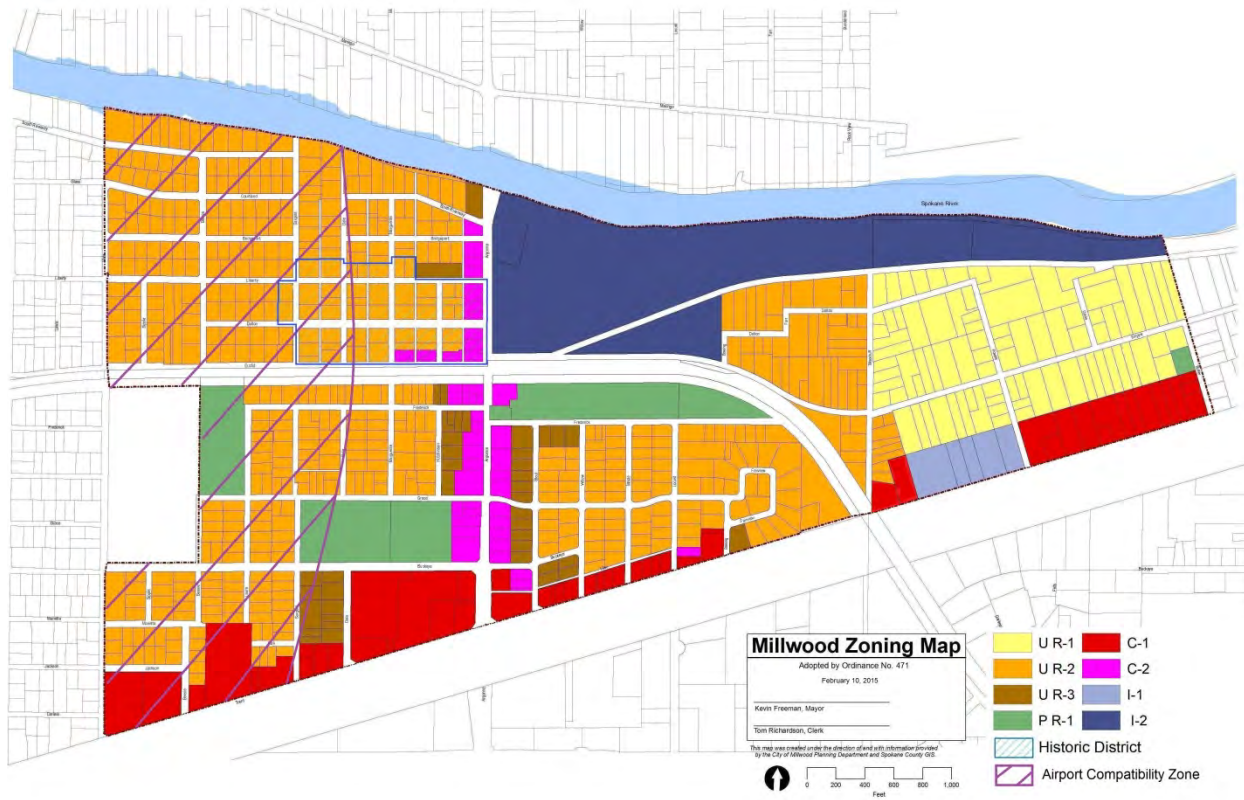


Figure 1-14. Millwood Zoning Map



1.8 ENVIRONMENTAL CONSIDERATIONS

1.8.1 Evaluation Methodology

The environmental overview is not intended to serve as a formal environmental assessment under the National Environmental Policy Act. Instead, the overview is intended to alert the airport to any potential significant environmental impacts posed by the airport development program and to inform the alternatives analysis (Chapter 4). The environmental overview will follow guidance as described in FAA AC 150/5070-6B, Section 605.

1.8.2 Air Quality

The FAA Order 1050.1F, “Environmental Impacts: Policies and Procedures,” and the FAA *Aviation Emissions and Air Quality Handbook* (version 3, update 1) guide when and how to conduct air quality emissions analyses for airport activities. Air quality concerns are regulated by the Clean Air Act, which established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter (PM_{2.5} and PM₁₀), and sulfur dioxide. The NAAQS set thresholds for outdoor levels of each pollutant that are safe for human health, public welfare, and the environment. When NAAQS are exceeded, the U.S. Environmental Protection Agency will designate an area as nonattainment, and emissions from federal actions will require further consideration.

The state of Washington has no areas designated as nonattainment for a federal health-based air quality standard. Spokane County is in attainment for all NAAQS standards; however, Spokane County is designated as a maintenance area for PM₁₀ and carbon monoxide emissions thru 2025. Nonattainment areas typically require further analysis to demonstrate conformance with the designated plan. Based on current information, no impacts to air quality are anticipated; however, an air quality review could be required if either the volume of aircraft or the makeup of the aircraft fleet using the airfield changes substantially.

1.8.3 Biologic Resources

Biologic resources would be found primarily within the riparian areas adjacent to the Spokane River. These areas are protected by Spokane Municipal Code 17E.020.050, which regulates fish and wildlife habitat conservation areas or associated buffers. Individual projects subject to building permits within Spokane are subject to city codes and could require a Habitat Management Plan within the designated setbacks unless waived by the planning director. The City of Spokane has set the following objectives:

- Ensure no further degradation of the shoreline.
- Set buffer distances to achieve a “no net loss” of shoreline ecological functions.
- Set buffer distances, where possible, to increase the potential for future shoreline restoration.

Critical areas’ regulation layers and buffers provided a strong basis for the shoreline buffer determination.

Figure 1-14 shows that the zoning at Felts Field is Light Industrial (LI), which allows a wide range of uses that is compatible with airport development and operation. The shoreline setback is based on multiple

factors determined by the Spokane Building and Planning Department. A 50- to 150-foot setback from the 100-year floodplain or a 50- to 250-foot setback from the median channel line are sometimes used to determine the proper restrictions. In this river reach, the setback is shown as 150 feet from the 100-year floodplain (**Figure 1-15**). All development on the land side of the setback would need to be coordinated with the Spokane Building and Planning Department for compliance with shoreline regulations.

Figure 1-15. Shoreline Management and Zoning Setbacks Map



Source: Spokane Building and Planning Department.

1.8.4 *Biologic Resources – Threatened and Endangered Species and Migratory Birds*

The U.S. Fish and Wildlife Service (USFWS) threatened and endangered species search identified three species: the water howellia (*Howellia aquatilis*), the yellow-billed cuckoo (*Coccyzus americanus*), and the bull trout (*Salvelinus confluentus*).

Water howellia (*Howellia aquatilis*) is a threatened species found at the edge of deep pools or potholes near cottonwood and aspen trees. Turnbull National Wildlife Refuge, which is approximately 17 miles south and west of Felts Field, is the only location of this species identified in Spokane County. Because the species is not known to exist on this stretch of the Spokane River and the required habitats are not present adjacent to Felts Field, there is low probability of affecting water howellia (*Howellia aquatilis*).

The yellow-billed cuckoo (*Coccyzus americanus*) is listed as a threatened species, but the project area is outside of the critical habitat designations. The yellow-billed cuckoo (*Coccyzus americanus*) requires thick,

closed-canopy riparian forest with an understory of dense brush (50 acres of minimum patch size). Various willows and cottonwoods usually make up these riparian forests. No potentially suitable habitat to support this species is within the survey area or the riparian community adjacent to Felts Field, and this species is unlikely to occur here.

The Washington Department of Fish and Wildlife Priority Habitats and Species Program mapping was also reviewed for this section of the Spokane River. Mapping identified the westslope cutthroat trout (*Oncorhynchus clarki lewisi*) and rainbow trout (*Oncorhynchus mykiss*) within the Felts Field reach of the Spokane River. Furthermore, the USFWS identified bull trout (*Salvelinus confluentus*) as Threatened within Critical Habitats within the Spokane River. The turbidity and temperature of surface waters affect aquatic species found in the Spokane River; however, no direct hydrologic connection exists from the project site to the Spokane River due to Washington State Department of Ecology and City of Spokane policies for stormwater runoff to be treated on-site. These policies limit the effects of airport operations or future planned uses on aquatic species. All future project contributions to water quality would be subject to Washington State Department of Ecology and City of Spokane Municipal Code review. If any in-water work is proposed, a biologic assessment of specific designs would have to fully assess impacts to the bull trout (*Salvelinus confluentus*).

The USFWS is responsible primarily for managing bald eagles and migratory birds under the federal Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. An unknown, but wide variety of migratory birds inhabit Felts Field due to the Spokane River and the Lake Coeur D'Alene basin upstream to the east. Bald eagles were removed from the federal endangered species list in 2007, and from the Washington Department of Fish and Wildlife state's list in 2017. Active bald eagle nesting and wintering occurrences are likely found within one mile of the airport due to mature stands of trees forming a riparian ribbon adjacent to the Spokane River. Cliff-nesting bird habitats (subject to the Migratory Bird Treaty Act) were shown along the Spokane River approximately ½ mile to the east of Felts Field. With Centennial Trail and E. Upriver Drive on the north bank of the Spokane River and Felts Field containing residential and public uses along S. Riverway Avenue on the south bank of the Spokane River, limited opportunities exist for eagles and migratory birds to nest and forage.

The riparian areas surrounding Felts Field are considered low-functioning habitats because they have been historically manicured and developed to the top of bank where the vegetation transitions from riparian forested to mowed upland grasses. It is also likely that many species, which could use the river corridor for migration, would not establish nests or residence due to the urban nature of the area, thus limiting the opportunities for foraging or isolation.

Conversion of the areas proposed for development would permanently remove potential habitat; however, based on the availability of surrounding open space tracts that provide valuable habitat and availability to accommodate wildlife, and due to the urban nature and lack of existing habitats, development proposed in the master planning efforts is not likely to have a significant impact on general wildlife species, migratory birds, or threatened and endangered species.

1.8.5 Climate

Spokane is part of the Inland Northwest between the Cascade and Rocky Mountains with the Blue Mountains to the south. The area enjoys four distinct seasons with hot, sunny summers and cold, cloudy winters. July is the warmest month of the year with highs in the upper 80s and lows in the 50s. January is the coldest month of the year with highs at 32 degrees and lows in the teens. The prevailing direction of the wind is from the southwest and west with winter winds common from the northeast. Rainfall averages 16–20 inches and can receive over 50 inches of snow annually. Spokane winters can become inverted or foggy with an average of 48 days of fog between November and February. Spokane's weather is highly typical of the inland desert northwest where clouds and inversion activities can bring greenhouse gases closer to the surface and cause heat to be trapped under normal urban conditions.

Development activities are being proposed to accommodate projected increases in airport operations due to normal growth. Some short-term increase in fuel consumption and resulting greenhouse gas emissions would be possible during construction activities. Airport operations would not be expected to significantly increase fuel consumption or greenhouse gas emissions due to implementation of future projects.

1.8.6 U.S. Department of Transportation (DOT) Section 4(f)

Section 4(f) of the Department of Transportation Act states that the FAA will not approve the use of land from a significant publicly owned park, recreation area, or wildlife and waterfowl refuge, or any significant historic site, unless a determination is made that (1) there is no feasible and prudent alternative to using such land, and (2) the proposed action includes all possible planning to minimize harm to the property.

Felts Field Historic District was recorded on the National Register of Historic Places in 1991 (**Figure 1-16**).

Figure 1-16. Felts Field Historic District



Source National Park Service. 2017. District generally from N. Fancher Road to N. Dollar Road on E. Rutter Avenue

The National Park Service notes that “Felts Field Historic District is significantly associated with the growth of aviation in the Inland Northwest, serving as the region’s first and, for two decades, principal commercial and military airport. The contributing structures, including historic civilian and military hangars, passenger terminal, National Guard headquarters, and a commemorative clock tower, closely reflect the development of aviation in Spokane from the mid-1920s to 1941. Although the airlines and National Guard unit relocated by the late 1940s, the buildings remain well-preserved and still reflect the characteristics of the historic period.”

Passenger terminal of the Felts Field Historic District



Source: Photo courtesy of the Washington Office of Archeology and Historic Preservation

The Spokane River Centennial Trail was designated a National Recreation Trail on May 24, 2010, and is a 37-mile-long paved trail to the Washington state line where it continues for another 24 miles as the North Idaho Centennial Trail. The Spokane River Centennial Trail is also designated a Section 6(f) resource, because Land and Water Conservation Funds were used for its acquisition and construction. A future connection to the Spokane River Centennial Trail is in the planning phases via the Millwood Trail, which is planned to be constructed along portions of the abandoned Great Northern Railroad right-of-way along the south bank of the Spokane River near the Upriver Hydroelectric Dam. Funding and timelines for trail construction have not been identified. The future Millwood Trail will be considered when future airport projects are planned.

Other potential Section 4(f) sites within the area include several parks. On the north side of the Spokane River is Camp Sekani Park, which is a Spokane County open space with mountain bike trails. The City and County of Spokane jointly own John C. Shields Park, which includes a trailhead for the Spokane River Centennial Trail. On the south side of the river at the southern end of the runway is Orchard Avenue Park, which is a softball park. The airport owns the land and leases to the City of Spokane, which operates it under an approved FAA concurrent use agreement.

Due to the presence of multiple recreation sites and the historic district on the airfield, any proposed development subject to the National Environmental Policy Act should prepare an assessment to determine whether a proposed action would result in the “use” of any of the properties to which Section 4(f) applies and if a proposed action is subject to mitigation. Adverse effects, defined as constructive uses (noise, visual, or other severe impairment), could occur at any of these sites if the airfield expansion intrudes on the enjoyment of one’s property and is defined as “substantially” impaired. However, the planned

development is not near the historic district, and the parks and trails within the proximity are across the Spokane River from the proposed development. During the environmental clearance process, a Section 4(f) analysis for constructive uses should be completed, although the effects are likely to be minor or “de minimis.”

1.8.7 Farmland

The Farmland Protection Policy Act (FPPA) was implemented in 1994 to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. Farmlands subject to the FPPA include prime farmland, unique farmland, and land of statewide or local importance. The Natural Resource Conservation Service provides a soil survey of the airport site, which designates Garrison sub-classed soils as “prime farmland if irrigated.” These soils are found in narrow bands adjacent to the riparian areas along the Spokane River, which would be protected from development by the City of Spokane shoreline protection ordinances.

The FPPA does not apply to land already committed to urban development or water storage, or developed land within urban areas, specifically with impermeable (paved) surfaces. Furthermore, the existing airport property soils are not “prime farmland” and are also exempt from the FPPA. No further consideration of soils or farmlands would be required for actions on Felts Field.

1.8.8 Hazardous Materials, Solid Waste and Prevention Pollution

FAA Order 1050.1F, “Environmental Impacts: Policies and Procedures,” defines hazardous materials as any substances or materials determined to pose an unreasonable risk to human health or the environment. These include hazardous substances and hazardous wastes. Hazardous substances are listed in 40 CFR part 302 and include substances that are ignitable, corrosive, reactive, or toxic. Once hazardous substances are thrown away, they become hazardous wastes.

The goal of the hazardous materials review processes is to identify recognized environmental conditions, which means the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release.

Environmental Data Resources, Inc. performed a search of hazardous material sites near Felts Field. Most registered facilities are for hazardous materials during the normal operations of industrial facilities, including several at Felts Field (registered at 5829, 5905, 6005, and 6400 E. Rutter Avenue). One site, the ATCT, built in 1967, has a report of asbestos used in its construction. Felts Field also reports one emergency release to the soil of fuel/oil, which was remediated within its 90-day limit; neither quantity nor location were identified for the spill. No other releases or recognized environmental conditions were identified within proximity of Felts Field.

Solid wastes generated during construction and operation of the hangars can be handled by transferring the solid waste and recyclables to the registered receiving facilities. The area is serviced by Spokane’s Waste to Energy Facility, which encourages recycling and waste reduction along with the recovery of energy. The

facility burns municipal solid waste to recover energy in the form of electricity. The plant is operated by the City of Spokane's Solid Waste Disposal Department and power is sold to Avista Utilities. The City of Spokane operates the waste-to-energy facility over landfilling because of its waste reduction capacity and the region's sole-source aquifer. The resulting ash is biologically inert and is sent to a landfill in Klickitat County for final disposal.

Future construction activities could require the short-term use of hazardous substances such as petroleum products, herbicides, fertilizers, paints, and solvents. Future projects should require the construction contractor to implement practices to prevent these substances from being released into the environment.

1.8.9 Historic, Architectural, Archaeological and Cultural Resources

The Felts Field Historic District was listed on the National Register of Historic Places in 1991 and comprises approximately 18 acres of the 420-acre airport property. Between E. Rutter Avenue and the parallel taxiway starting at N. Fancher Road and continuing to N. Dollar Road, the historic buildings of the district include three aircraft hangars, a passenger terminal, the National Guard headquarters, a small storage building, clock tower and a free-standing metal and neon sign. At one end of this row of buildings is the Northwest Airlines Company hangar, a large wood-frame building from the mid-1930s with Art Deco details.

Other potential historic resources in the area can be seen in the 1938 historic photo. The railroad, the hydroelectric power plant, and several residences south of E. Rutter Avenue along E. Union Avenue remain. These sites might be considered historic due to modifications or modernizations between the time they were constructed and this evaluation.

Any project that could affect either known or potential cultural resources should be evaluated when the specific details of each project are known.

1.8.10 Noise

Aircraft noise is a consistent concern of communities and residents surrounding airports. Noise is generally defined as unwanted sound; therefore, determining acceptable levels is subjective. The day-night average sound level (DNL) methodology, expressed in decibels (dB), is the standard federal metric for determining cumulative exposure of individuals to noise. The DNL represents the average sound exposure during a 24-hour period rather than the sound level for a specific noise event. Areas affected by noise can be defined as a severe or substantial noise impact area. Severe noise impact areas include those contained within the

1938 Historical Photograph of Felts Field



Source: Environmental Data Resources, Inc.

70 DNL contour and above, while substantial noise impact areas include those between the 65 DNL and 70 DNL contours. According to the FAA, the U.S. Environmental Protection Agency, and U.S. Department of Housing and Urban Development, the threshold of significance for a significant impact occurs when noise exposure over sensitive areas is at or above 65 DNL.

The future (20-year) airport noise contours has been prepared using FAA's Aviation Environmental Design Tool as part of this master plan.

1.8.11 Land Use

The objective of land use planning is for communities to guide development to be compatible neighbors who tolerate airport operations. Adjacent land uses that an airport does not directly control can create inconsistent uses that can affect safety and airport operations, and that can adversely affect the environment (e.g., noise, light, vibrations). Surrounding land uses compatible with airports typically include those uses that complement an airport without negatively affecting the operation of the airport or exposing the community to unacceptable noise or safety hazards. Compatible land uses also consider potential hazards to aircraft.

Incompatible uses within the Felts Field area include wildlife, residential, and sensitive outdoor receptors near the airport. First, the Spokane River would be considered a wildlife attractant. While certain city goals and policies encourage riparian growth, wetlands, habitat formation, and wildlife along the Spokane River, these are incompatible per FAA recommendations. Wildlife in the area of airport operations could result in an aircraft-wildlife strike. FAA AC 150/5200-33C, "Hazardous Wildlife Attractants On or Near Airports," recommends that wildlife attractants be at least 10,000 feet away from the Air Operations Area for airports primarily serving turbine-powered aircraft, because most (over three-quarters) of all bird strikes occur under 1,000 feet.

Next, the FAA land use compatibility guidelines for average sound levels have been established for residential, public, and recreational land uses. The FAA has accepted a maximum of 65 DNL as the threshold of concern for noise impacts over residential areas without mitigation. Residential, public, and recreational uses on the east end of Runway 22 have traditionally been accustomed to aircraft. However, a detailed noise analysis will outline if the planned development would cause an increase of 1.5 dB or greater within the 65 DNL contour over these noise-sensitive areas. Because the planned development could attract more and potentially larger aircraft, these criteria should be considered during environmental review of the future actions.

Lastly, existing land uses to the west and toward the Spokane urban core are largely industrial and commercial, and transportation and manufacturing related—all of which are typically compatible with noise, light, and vibrations generated by aircraft using Felts Field. To the north and east a large variety of open space had been preserved, but in the 1990s, several parks and trail systems were developed. While these uses could predate the modern airfield, both the City and County of Spokane established Section 17C.180.040, "Airfield Overlay Zone Boundaries," which restricts new land uses to those deemed compatible with FAA and WSDOT Aviation Division guidelines for the operational safety of aircraft, clear

airspace, and land uses. While not directly connected to Felts Field, the city of Millwood is within the airport area of influence and has also established an airport compatibility zoning to establish restrictions and meet FAA policies.

1.8.12 Natural Resources and Energy Supply

Airport development actions could change local energy consumption and requirements, although not typically to where significant impacts would occur. Executive Order 13123, “Greening the Government Through Efficient Energy Management,” encourages federal agencies to expand the use of renewable energy. FAA Order 1050.1F, “Environmental Impacts: Policies and Procedures,” states that the development of facilities should exemplify the highest standards of design, including principles of sustainability. Avista Utilities provides electricity at Felts Field. Of Avista’s total generating capacity, 56% comes from renewable energy sources (of which 48% is hydropower), including the Upriver Hydroelectric Dam at the northwest corner of the airport. The City of Spokane manages trash and waste and uses trash to generate electricity, which is also sold to Avista Utilities.

Energy requirements associated with airport improvements generally consist of either 1) those related to existing facilities (terminal and airfield lighting requirements), or 2) air/ground vehicle movement requiring fuel consumption. Impacts are considered significant only in extreme cases where demand exceeds supply. Minor increases in the consumption of natural resources would occur because electrical and water service would be required for the planned development. Increases in electricity and water usage at Felts Field would be expected, although the increases would be negligible in relation to local availability.

1.8.13 Socioeconomic, Environmental Justice, and Children’s Environmental Health and Safety Risks

Social impacts from a project would depend on how that project interacts with the character, habits, and economics of the people and community near the planned changes. A project’s effects on business, employment, transportation, utilities, etc. are all factors that could change the social elements of an area. The FAA requires actions that would either adversely or beneficially affect the social environment be evaluated for significance during planning and environmental clearance. Off-airport actions could include acquiring land or airspace avigation easements for safety and/or obstruction mitigation. Either on-airport or off-airport projects that could affect the social environment could require further evaluation.

1.8.14 Visual Effects

Light emissions from the various types of lighting installed on an airport or from approaching/departing aircraft could annoy people living or working near an airport. Ways to reduce increased light from proposed development include down-shielding of lighting on buildings, roadways, and equipment, which would reduce the light leaving an airport’s boundaries. Upgrades of existing runway lighting or approach lighting systems would not be expected to increase visual effects due to the distance to receptors. The aesthetic value of an area is generally influenced by its landscape and a viewer’s perception. Felts Field sits in an urban environment where existing streets have lighting, other manufacturing facilities are operating lights during dark hours, and rail traffic occurs at any time of the day. Any increase in light emissions from future

development would likely be considered negligible if common practices for reducing light pollution would be applied.

1.8.15 Water Resources – Wetlands







Wetlands are defined in Executive Order 11990, “Protection of Wetlands,” as those areas inundated by surface or groundwater with a frequency to support, and under normal circumstances does or would support, a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Three parameters define a wetland as outlined in the U.S. Army Corps of Engineers’ *Wetlands Delineation Manual*: hydric soils, wetlands classified vegetation, and hydrology (presence of water).

Analysis of the National Wetlands Inventory (NWI) data indicates the presence of wetlands within the study area. Few identified wetlands are within the airport property, and only the riparian/riverine and lake wetlands are associated with the Spokane River (**Figure 1-17**).

Wetlands serve a variety of functions, including groundwater recharge, flood control, sediment removal, and nutrient cycling. A wetland delineation and coordination with applicable resource agencies could be necessary before project implementation to further analyze the impacts the proposed improvements would have on these riparian wetlands. However, these wetland areas are protected by City of Spokane Municipal Code 17E.070.110, “Wetland Buffers,” and are within the shoreline setback area where future development opportunities are limited. Therefore, the future development would likely not have any effects or alter wetlands with its implementation.

Figure 1-17. Spokane River and USFWS National Wetlands Inventory Map at Felts Field



	Freshwater Emergent Wetland		Lake
	Freshwater Forested/Shrub Wetland		Other
	Freshwater Pond		Riverine

Source: U.S. Fish and Wildlife Service National Wetlands Inventory

1.8.16 Water Resources – Spokane River and its Floodplain

The Spokane River is generally contained in its channel, with substantial freeboard even at the 100-year flood event (1% annual chance). As shown in **Figure 1-18**, the red zone of the 100-year floodplain is generally contained to the channel of the river with little chance of overflowing due to steep and rocky riparian areas.

Figure 1-18. Spokane River and Floodplain at Felts Field



Source: City of Spokane Planning.

The floodplain is a known hazard because of the river's location. However, due to the flow capacity, the lack of data identifying historical floods, and the depth of the channel banks, Felts Field would probably not flood. The Spokane County Flood Insurance Study¹ identifies the areas of known hazards, based on a 1974 event; this study does not identify hazards at Felts Field.

¹ <https://static.spokanecity.org/documents/projects/floodplain/spokane-county-flood-insurance-study.pdf>

1.8.17 Water Resources – Surface and Groundwater

The Spokane Valley-Rathdrum Prairie Aquifer and the Spokane River are the primary hydrologic features in the study area, which is shown on the City of Spokane's Aquifer Susceptibility Map. The map shows Felts Field within the Low Susceptibility Area and within the Wellhead Protection Area.

Many studies about the Spokane River and Spokane Valley-Rathdrum Prairie Aquifer show that the river and aquifer are exchanging water. Since the mid-1980s, the City of Spokane's priority has been to protect the drinking water supply, so an Aquifer Protection Area (APA) was established. The entire Felts Field is within the APA. The APA's primary goal is to provide regional sewer service to the Spokane Valley and remove approximately 30,000 individual septic systems from the aquifer. Because municipal sewer already services Felts Field, the remaining considerations are stormwater infiltration and the use of chemicals, fertilizers, and fuel by the airport. The APA's second goal is to protect wellheads. Because municipal water serves Felts Field, no new wells are likely to be proposed.

Hazardous materials, including fuels, are regulated and managed according to best practices. All existing and proposed stormwater facilities should be designed and permitted during development to limit contaminants reaching the aquifer, and in the case of a spill provide good measures for cleanup and disposal at permitted facilities.

1.8.18 Water Resources – Wild and Scenic Rivers

The Spokane River is north of Felts Field; however, the river has not been designated as a Wild and Scenic River and therefore no impacts to Wild and Scenic Rivers are expected.

1.9 NAVIGATIONAL AIDS

NAVAIDs are any sort of marker that aids a pilot during navigation. An inventory of NAVAIDs and air traffic facilities on or near Felts Field are included below:

- **Airport Traffic Control Tower (ATCT):** Felts Field is equipped with an ATCT, which operates daily from 6:00 a.m. until 8:00 p.m. Local Time, 7 days per week. The ATCT is the central facility in the Felts Field air control system. Communication systems for air and ground, visual signaling, and other devices are used to provide safe and expeditious movement of all air traffic. Ground movement of aircraft and vehicles on the runway/taxiway system are also under the control of the ATCT. The Felts Field ATCT is classified as a contract tower because it is not staffed by FAA air traffic controllers, but rather by a private company that is certified by the FAA.
- **NonDirectional Beacon (NDB):** An NDB is a low- to medium-frequency radio beacon transmitting nondirectional signals, which the pilot of an aircraft equipped with directional finding equipment can determine the bearing to or from the radio beacon. The Felts Field NDB is on Deer Park Airport, approximately 18 miles north of Felts Field.
- **Very High Frequency Omni-Directional Range/Tactical Air Navigation (VORTAC):** A VORTAC is a type of radio navigation system, which broadcasts a high frequency radio signal in which the pilot of an aircraft

equipped with directional finding equipment can receive a magnetic bearing from a station. This NAVAID provides azimuth (direction) and distance information to the pilot. The Spokane International Airport VORTAC is approximately 9 nautical miles west of Felts Field and is the NAVAID used for the VOR published approach. The VORTAC is also used for en route navigation. The Spokane International Airport VORTAC is designated as a high altitude facility and is usable from 1,000 feet AGL to 14,500 feet AGL. Another VORTAC facility near Felts Field is at the Coeur d'Alene Airport 21 nautical miles northeast.

- **Localizer:** The localizer is the lateral component of an ILS used to establish and maintain an aircraft's horizontal position until visual contact confirms the runway location. The localizer is combined with the vertical glide slope to provide the ILS. Runway 22R has a localizer north of the runway.
- **Glide Slope:** The glide slope is the vertical component of an ILS used to establish and maintain an aircraft's descent rate until visual contact confirms the runway alignment and location. Runway 22R has a glide slope north of the runway.
- **Automated Surface Observation Station (ASOS):** An ASOS is a system of weather-reading instruments that collect weather conditions at an airport. This system provides information on altimeter settings, winds, temperature, dew point, density altitude, visibility, and cloud/ceiling. The ASOS at Felts Field provides ATCT personnel with weather information relayed to pilots either verbally or via the Automated Terminal Information System radio broadcast. This weather information is also accessible via the telephone and internet. When the ATCT is closed, the ASOS information is broadcast over the ATCT radio frequency.

In addition to the aforementioned NAVAIDs, Felts Field is also equipped with the following visual aids, which assist pilots in locating the runway at night or during periods of low visibility:

- **Visual Approach Slope Indicator (VASI):** A VASI provides vertical, visual glide-path information to pilots approaching the runway. A VASI consists of a set of lights designed to appear red or white, depending on the angle at which it is viewed from, and are typically on the left side of the runway. The VASI system can be seen for up to 5 miles during daylight hours and up to 20 miles during nighttime hours. Runway 4L-22R has 4-box VASIs at each end of the runway. The Runway 4L glide path is set at 3.0 degrees with a threshold crossing height of 50 feet and is left of the runway centerline. The Runway 22R is set at 3.5 degrees with at a 44-foot threshold crossing height and is right of the runway centerline.
- **Precision Approach Path Indicator (PAPI):** A PAPI provides vertical visual glide path information to pilots approaching the runway. PAPIs consist of two, three, or four boxes of lights typically on the left side of the runway. Runway 22L has a four-box PAPI. The PAPI system can be seen for up to 5 miles during daylight hours and up to 20 miles during nighttime hours. The approach angle for the PAPI is set to 3.8 degrees with a threshold crossing height of 42 feet AGL.
- **Runway End Identifier Lights (REILs):** REILs are two synchronized flashing lights, one on each side of the runway threshold. REILs identify the runway end to approaching pilots. Runway 4L has REILs.

- **Medium Intensity Runway Lights (MIRLs):** MIRLs are used to outline the edges of runways during periods of darkness or poor visibility. Runway 4L-22R has MIRLs. Runway 4R-22L is not equipped with edge lighting.
- **Rotating Beacon:** A rotating beacon is a visual aid that indicates the location of an airport. Rotating beacons are electronic devices that emit alternating white and green beams of light in a 360-degree pattern. The rotating beacon for Felts Field is atop the ATCT.
- **Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR):** An MALSR is a series of lights off the end of the runway aligned with the runway centerline and that provide early runway lineup and lead-in guidance, which are beneficial during periods of reduced visibility. Felts Field has an MALSR off the end of Runway 22R