

CHAPTER ONE INVENTORY

ED CARLSON MEMORIAL FIELD- SOUTH LEWIS COUNTY AIRPORT MASTER PLAN UPDATE

This first element of the Ed Carlson Memorial Field-South Lewis County Airport Master Plan Update documents the existing conditions to include Airport facilities and aviation activity. The information presented represents baseline data and the foundation for the subsequent chapters. Identifying what is available today allows the study to address what facilities are insufficient to meet the projected aviation demand.

This task was accomplished through a number of sources and actions that included the following:

- Conducting a site visit to identify the Airport facilities, their general location and condition
- Meeting with the Airport Systems Manager, Airport users and other stakeholders to discuss issues associated with the Airport facilities

- Obtaining Federal Aviation Administration (FAA) and Washington State Department of Transportation (WSDOT) Aviation data
- Reviewing available County studies, drawings, and other documents

AIRPORT LOCATION AND ACCESS

The Ed Carlson Memorial Field-South Lewis County Airport (Airport) is just over 100 miles south of Seattle and 75 miles north of Portland, OR, where both provide access to major air carrier service. Located five miles east of Interstate 5 (**Exhibit 1A**), the Airport is easily accessible from major roadways. The Cities of Toledo and Winlock are the closest communities to the Airport.

Access to the Airport from Toledo—three miles southwest of the Airport—is via Jackson Highway just past Buckley Road. Access from Winlock is via Washington State Highway 505 to Jackson Highway. **Exhibit 1B** depicts the Airport and the local roadways surrounding the facility.

AREA LANDSCAPE

The South Lewis County area has access to a broad range of scenery and recreational opportunities. Mountains, foothills, forests, rivers, lakes, and prairies are all in close proximity. Toledo is located on the banks of the Cowlitz River and is known as the Gateway to Mt. St. Helens.

The Airport is at an elevation of 374 feet mean sea level (MSL).

CLIMATE

Toledo has an average of 136 sunny days and an average annual 45.7 inches of precipitation. According to the Western Regional Climate Center's data for Toledo from 1950 through 2007, the mean maximum temperature of the hottest month (August) is 78.8° Fahrenheit, which is an important temperature in determining runway length requirements in a subsequent chapter. The City's average low temperature for the coldest month (December) is 44.9° Fahrenheit.

AIRPORT HISTORY

The Ed Carlson Memorial Field-South Lewis County Airport was originally known as the Toledo-Winlock-County Airport when the two municipalities and the County had joint ownership. Prior

to their ownership, the Airport was a privately-owned airstrip that served as an emergency airfield. World War II prompted Lewis County to pass a resolution to acquire the airfield and invest \$7,000 in improvements along with matching funds from the two municipalities. Subsequently, the U.S. government invested \$150,000 for additional improvements during war time. While the Airport was officially under the control of the U.S. government, a three-member Airport commission was established with one representative from each of the three owners. When the war ended, the three-member Airport commission took over. In 1975, the commission was reorganized and increased from three to six members: two representatives from each municipality and the County Commission. In December 2001, the municipalities released their interests in the Airport and the County took full ownership. By 2002, the County had established a five-member Airport Board consisting of area residents to oversee the Airport, but the Board of County Commissioners (BOCC) retained ultimate decision-making authority. Further, the Airport was renamed Ed Carlson Memorial Field-South Lewis County Airport. In October 2002, the County published a planning study titled *Airport Needs Assessment, Planning and Recommendations*, which analyzed Airport maintenance and capital improvement needs, conducted an economic analysis of Airport operations, provided recommendations for maintenance and capital improvements, and addressed funding sources. An Airport Layout Plan (ALP) and Narrative Report was prepared in 2003, the FAA approved the ALP in November 2003, which updated the previous 1995 Airport Layout Plan and Narrative Report. In 2005, the BOCC established a part-time Airport systems manager position to manage the daily operations of the Airport and enhance Lewis County's ability to achieve their established goals and objectives for the Airport.

Since its acquisition, the Airport has continually improved with both airside and landside development. According to FAA records, Lewis County has received funding grants for the following projects since they obtained full ownership:

- 2003 – Rehabilitate runway; improve runway safety area (including relocation of Runway 5 VASI); rehabilitate runway lighting; install runway vertical/visual guidance system (REILs Runway 5-23 and PAPI Runway 23); update Airport master plan (note: ALP Update Report completed).
- 2007 – Conduct miscellaneous study (survey for Runway 5-23 localizer approach with vertical guidance); construct general aviation apron, including environmental and design (phase 1).
- 2008 – Construct apron; rehabilitate apron.

- 2010 – Rehabilitate Runway 5-23, including remarking (Note: instrument approach procedures also published in 2010).
- 2011 – Obstruction removal (trees); rehabilitate Runway 6-24 (fog and crack seal).

AVIATION ACTIVITY

For General Aviation (GA) airports, the primary measurements of aviation activity include the number of based aircraft and the number of annual aircraft operations. An operation is a takeoff or a landing, so a touch-and-go performed during flight training counts as two operations.

According to Lewis County, the based aircraft fleet includes the following:

- 36 single engine
- 6 multi-engine
- 2 helicopters
- 3 ultralights

The FAA Airport Master Record (FAA Form 5010) for the Airport reports that, in addition to the aircraft listed above, there is one based jet aircraft. However, the County stated that this jet is no longer at the Airport.

For South Lewis County Airport, Airport operations fall into two of the FAA operations categories to include GA and military. GA aircraft operations are estimated to represent 96% of total annual operations at the Airport, while military operations represent 4%.

Airport operations are also divided between GA local and itinerant activity. Local operations refer to aircraft remaining near the Airport and include training activity such as touch-and-go operations, aircraft maneuvers in a practice area near the Airport, and skydiving operations. Itinerant activity refers to all other operations that depart to or arrive from another airport. GA itinerant operations make up the majority of the GA operations at 72% of the total GA, while local operations represent 28% of total GA.

Considering the recent substantial drop in aviation activity at the Airport, the County estimated that total annual operations in 2012 were approximately 16,265. At airports without an air traffic control tower, operations are always estimated. These operations are conducted by a

variety of transient and based aircraft for a broad range of business and recreational purposes. Operations primarily consist of small, single-engine piston fixed wing aircraft, but other aircraft types operate there such as multi-engine piston, helicopters, turboprops, and some limited activity by corporate jets.

Examples of aviation activity conducted at the South Lewis County Airport include the following:

- Corporate/Business
- Flight Training
- Emergency Medical
- Medical/Patient Transfer
- Search/Rescue
- Military
- Police/Law Enforcement
- Recreational Flying/Skydiving
- Environmental Patrol
- Aerial Photography
- Real Estate Tours
- Special Events (i.e. Fly-ins)

EXISTING FACILITIES

Consisting of an estimated 96.6 acres, the Airport includes facilities described as airside, landside and support. Existing facilities are depicted on **Exhibit 1C**.

AIRSIDE FACILITIES

Airside facilities include active aircraft movement areas such as the runways, taxiways, and aircraft apron areas. The South Lewis County Airport has a single runway, full-length parallel taxiway system, and aircraft apron areas with tiedowns on the east side adjacent to the building areas.

RUNWAYS

Runway 6-24—with a northeast-southwest alignment—is 4,479 feet in length by 150 feet wide. The runway is asphalt-paved. Relocated thresholds placed on this runway in the past reduced the length to its current 4,479 feet to comply with FAA design standards for obstacle clearance slope and runway safety area.

The wind rose on the last Airport Layout Plan indicates that prevailing winds are from the southwest. According to the County, runway utilization is an estimated 75% of operations on

Runway 24 and 25% on Runway 6. However, during calm winds, most aircraft operators will choose Runway 6. The local skydiving club will also use Runway 6 for departures unless the tailwinds are excessive. Most arriving aircraft prefer Runway 24 for the short taxi time and easy turnoff to the apron and building area.

TAXIWAYS

Runway 6-24 is served by a full-length parallel taxiway designated as Taxiway A, which is 272 feet from runway to taxiway centerline. There are four connecting taxiways between the runway and Taxiway A designated as A1, A2, A3, and A4 from west to east. Connecting taxiways A1 and A4 are located at Runway 6 and 24 ends, respectively; A2 is at the east end of the building area and A3 is just east of midfield.

Parallel Taxiway A is 21 feet wide between connecting Taxiway A2 and A4, but 50 feet wide between A1 and A2, which is the west 1,000-foot-plus stretch of taxiway in front of the building area. Taxilanes off this portion of Taxiway A serve the aircraft hangar areas.

An additional taxiway provides access off Airport property—referred to as through-the-fence access.

APRONS AND AIRCRAFT PARKING

The Airport has one contiguous aircraft apron area at the Airport located at the west end of the airfield. This asphalt-paved apron has dimensions of 420-by-140 feet to serve aircraft parking needs, but there are no tiedown anchors. According to the County, transient aircraft and two based aircraft use the apron. There are also three tiedowns in the grass adjacent to the Airport office building's parking lot. South of the apron, three inactive aircraft are presently parked in the grass in official tiedowns.

There is no officially designated helipad or heliport on the airfield so helicopters may arrive on a runway approach and hover-taxi to park on the apron or refuel at the west end of the apron.

AIRFIELD PAVEMENTS

The runway, taxiways, and apron are designed to accommodate small general aviation aircraft. Runway 6-24 has a pavement strength rating of 25,000 pounds for aircraft equipped with single

wheel landing gear (SWL). The runway is in good condition. The last runway pavement maintenance project was completed in 2012, which included crack sealing, fog sealing, and restriping of the runway markings.

The apron has a pavement strength rating of 16,000 pounds for aircraft equipped with SWL. The apron was reconstructed back in 2008 and is still in excellent condition. The taxiway and taxilanes are in poor condition, with rutting, alligator cracking, and depression in many parts of the taxiway and taxilanes pavements.

In 2012, Washington State Department of Transportation (WSDOT) conducted a state wide Airport Pavement Management System Study to evaluate the current condition and preservation needs of Washington’s airport pavements. Part of the study involves using the Pavement Condition Index (PCI) procedure to indicate the condition of the operational surface of the pavement and to some extent, the structural integrity of the pavement. WSDOT recorded the distress type, severity, and quantity of each section of the airfield pavement, and this information was used to calculate the PCI value of the section. The final calculated PCI value is a number from 0 to 100, with 100 representing a pavement in excellent condition.

Table 1A below summarizes the PCI values for the airfield pavements at the Airport.

Table 1A. Pavement Condition Index (PCI) Values

Airfield Pavement	PCI	Condition
Apron	100	Excellent
Runway	85	Fair to Good
Runway Shoulders	94	Good to Excellent
Taxiway A1 & A2 (incl. 50’ wide Taxiway A section)	31	Poor
Taxiway A (21’ wide section), A3 & A4	11	Poor
Taxilanes between Hangars	7-32	Poor

Source: WSDOT Airport Pavement Management System Study, 2012

AIRFIELD LIGHTING

Runway 6-24 is equipped with a medium intensity runway lighting (MIRL) system and a Runway End Identifier Lighting (REIL) system at both runway ends. The MIRL and REIL systems are pilot-activated. The MIRL system, installed in 2003, is in good operating condition today. As part of the same lighting improvement project in 2003, REIL systems for both runway ends were replaced.

The parallel taxiway has non-standard reflectors—each pair of reflectors is staggered opposite each other along the taxiway. The FAA requires the reflectors be opposite each other.

AIRFIELD MARKINGS AND SIGNAGE

Runway 6-24 has nonprecision markings. Connecting taxiways to the runway are marked with hold bars and taxiway centerlines between the hold bars and runway. The parallel taxiway and other taxiways/taxilanes are not marked with centerlines. Unlighted distance-to-go-markers along the south side of the runway are in good to fair condition. Unlighted runway hold signs are in good to fair condition. Other airfield signage at runway/taxiway intersections is in good to fair condition.

AIRPORT NAVIGATIONAL AIDS

Airport navigational aids include both visual and instrument approach aids.

The Airport's visual aids include a rotating beacon, Visual Approach Slope Indicator (VASI) on Runway 6, Precision Approach Path Indicator (PAPI) on Runway 24, and three wind indicators.

The rotating beacon is atop a 60-foot tower at the far west end of the building area next to the Airport property line along Jackson Highway. The beacon, in good operating condition, is on the opposite side of the access road from the Airport and sewage treatment plant.

The three wind indicators are in good to fair condition with one each located near a runway end and one at the Toledo Flying Club hangar. Two of the three wind indicators are lighted—the one near Runway 6 end and the one at the Toledo Flying Club hangar. The VASI system on Runway 6 and the PAPI system on Runway 24 are both owned by the County. The PAPI is in good operating condition and was installed in 2003. The VASI system is in fair to poor condition and was relocated as part of the Runway Threshold relocation in 2003.

The Airport does not presently have any instrument approach equipment. However, there are two instrument approach procedures published for the Airport to include:

- RNAV (GPS) Runway 6
- RNAV (GPS) Runway 24

RNAV GPS = Required Navigation using Global Positioning System satellites. Visibility minimums are as low as one mile for Category A and B aircraft.

The Airport systems manager noted that many of the small aircraft that use the Airport do not presently have the proper equipment to use these approaches.

WEATHER REPORTING SYSTEM

The Airport does not have a weather reporting system on site. However there is an Automated Weather Observing System (AWOS) 14 miles northwest at Chehalis-Centralia Airport, and provides weather conditions with updates on an hourly basis or when weather conditions change significantly.

LANDSIDE FACILITIES

Landside facilities at the Airport are located on north side of the airfield near the Runway 6 end. These include facilities such as the Airport office, aircraft storage hangars, fuel storage, vehicle access, and parking. Aviation services provided at the Airport are also addressed in this section.

AIRPORT OFFICE BUILDING

The Airport office building is located at the far west end of the building area at the main entrance to the Airport. This new building sits over the footprint of the former Flight Service Station (FSS), but is much larger than the FSS, which was an old WWII wooden building. The new structure—with dimensions of 48 by 72 feet, or 3,456 square feet—houses both the Airport office/lounge space and a sewage treatment facility. The Airport office/lounge space totals 728 square feet with 75% consisting of an L-shaped lounge area and a separate office for the Airport Systems Manager. The remaining 25% of the space contains two restrooms, an electrical room, and a storage room.

The sewage treatment facility—discussed later in the utilities section—shares a common wall with the Airport office/lounge space.

HANGARS

Aircraft hangars at the Airport provide storage for most of the aircraft based at the Airport. With limited space available, transient aircraft are not typically stored in hangars, but must park

in the grass. All hangars are on ground leases with the exception of two County-owned hangar buildings—one conventional and one T-hangar. A summary of the hangars at the Airport follows.

- Conventional/community hangars – There are 13 of these hangars with each providing storage for up to several aircraft. The majority of these hangars have one large open bay inside, but one is sectioned off into three bays. All of these hangars are at capacity. Most are in good to fair condition, but the County-owned hangar is in poor condition.
- T-hangars – There are three banks of T-hangars and each has seven units. All T-hangar units are filled. The two privately owned T-hangars are fully enclosed with doors; the County-owned T-hangar has an open face (without doors) and is in poor condition.

The majority of these hangars were constructed in the last 25 years, but four individual hangars and the open face T-hangar were built prior to 1989, according to an old 1989 Airport photo.

The closest hangar to the airfield is at an estimated 338 feet from the Runway 6-24 centerline. Access from the conventional hangars and T-hangars is from the apron and taxilanes up to their connection with Taxiway A.

AVIATION SERVICES

There is no Fixed Base Operator (FBO) at the Airport, but Lewis County provides 100LL fuel at a self-serve 24/7 fueling station at the west end of the aircraft parking apron not far from the Airport office. However, there are a few Specialized Aviation Service Operations (SASO) at the Airport. The FAA defines a SASO as a single-service provider—a special type of Fixed Based Operator performing less than full services.

Other services offered at the Airport include airport management, aircraft parking on the apron, a meeting area in the Airport office building (L-shaped lounge area), and restrooms. While no courtesy transportation is available, the Airport systems manager often takes pilots/passengers to the local Enterprise rental car office or to the Chehalis Airport where they have a courtesy vehicle or can rent other vehicles for transportation. There are also two local area taxi companies providing service to Airport visitors.

FUEL STORAGE

There are two underground fuel storage tanks at the Airport, but one has been deactivated. The second tank (10,000 gallons), which stores 100LL fuel, has been properly lined to comply with environmental regulations. Jet A fuel is not provided at the Airport, but Chehalis provides Jet A.

VEHICLE ACCESS, PARKING AND SECURITY

Vehicle access to the Airport is on a two-lane road just off Jackson Highway. Limited unmarked parking is available at the Airport office building. The Airport system manager indicated that Airport tenants often drive onto the aircraft apron and taxiway and down to the hangar area. Others drive on the main access north of the hangars. “No Parking” signs were required in some areas to keep traffic from congesting the circulation areas. Hangar tenants typically park in their hangars or outside the hangars on the grass.

AIRPORT SUPPORT

Airport Support briefly addresses emergency services, Airport maintenance, fencing, utilities, and ground transportation.

EMERGENCY SERVICES

The Lewis County Sheriff’s Department provides law enforcement support to the Airport including occasional patrol.

Firefighting support is provided by both a volunteer fire department and the Lewis County Fire District #2 in Toledo. The volunteer fire department has a two-bay fire station located on Tucker Road, an estimated two miles from the Airport. While firefighters are volunteers, the station is staffed with one full-time resident.

The Lewis County Fire District #2 station in Toledo—3.5 miles from the Airport—is staffed with County-employed firefighters as well as volunteer firefighters. In an airfield emergency, ARFF-trained firefighters can respond within 15 minutes.

AIRPORT MAINTENANCE

Lewis County staff typically provides routine Airport maintenance with County equipment and vehicles, but the County also contracts for such services, as needed. For example, contractual maintenance is used for Airport mowing four times per year—typically May, June, July, and August. All equipment used at the Airport, as needed, is stored with County equipment off-site.

FENCING

Perimeter fencing around the Airport is limited and primarily includes four-foot fencing to keep cattle out. There are currently no gates limiting access to the Airport operational areas.

DRAINAGE

The entire Airport site is relatively flat, with limited fall from the east to the west. The runway's storm drainage system is comprised of a series of catch basins located on either edge of the runway pavement approximately 200 feet apart. These catch basins collect the stormwater runoff from the runway and convey the stormwater through a 24-inch storm pipe that runs underneath the runway pavement and drains from south to north. This system discharges the stormwater to an existing drainage ditch just north of the Airport's access road and conveys the runoff from the Airport's property under Jackson Highway. Areas north of the runway also eventually drain to this same existing drainage swale.

Runoff on the south side of Runway 6-24 generally flows in a south westerly direction towards an existing shallow swale approximately 270 feet from the runway centerline. Stormwater then flows in a westerly direction parallel to the existing runway. Drainage in the swale is conveyed to a 24-inch culvert under Buckley Road west of the site and discharges into Bill Creek, which flows into the Cowlitz River in Toledo.

UTILITIES

The Airport has water, sanitary sewer, electrical, and telephone/internet service. A sewage treatment facility is located at the Airport. The system consists of a Membrane Filter Reactor (MBR), located by the Airport office.

There is an electrical storage structure near the rotating beacon and Airport office building, which serves all the airfield lighting needs, including the runway lighting, Airport rotating beacon, REIL's, VASI, and PAPI. This structure has been renovated to include metal siding and roof, and air conditioning. In addition to the airfield lighting equipment, it contains a water pressure tank from the new well that supplies the new office building and MBR system, and a Sheriff's Office radio relay station. This building structure is in good condition.

GROUND TRANSPORTATION

As previously noted in the Aviation Services section, Airport users can request taxi service from two local area taxi service providers in addition to the courtesy transportation service that the County's Airport systems manager provides, as needed, to and from the local area or to the Chehalis Airport.

For long distance ground transportation in the area, rail service and bus service is available. A historic train depot (1912, restored) is located in Centralia. Amtrak provides rail service. Greyhound bus service is also available in Centralia.

ENVIRONMENTAL INVENTORY

The purpose of this section is to summarize the environmental setting of the Airport, and identify any potential environmental constraints.

WETLANDS AND WATERWAYS

Previous wetland/waters delineations and determinations associated with site development at the Airport have identified streams and wetlands in proximity to and within Airport controlled property (**Exhibit 1D**). Previously identified emergent wetlands are located at the western end of the Airport and south of the runway. The US Fish and Wildlife Service's National Wetland Inventory also indicates wetlands in this vicinity. They are part of a Palustrine wetland system that includes "non-tidal wetlands dominated by trees, shrubs, emergent, mosses or lichens." Most wetland areas near the Airport are classified as Freshwater Emergent Wetland, though few are Freshwater Forested / Shrub Wetlands. Most are either subject to temporary flooding (surface water present for brief periods during growing season) or seasonal flooding (surface water present for extended periods during growing season).

Waterways that have been previously identified include an unnamed tributary to Lacamas Creek to the north of the Airport access road.

Soil mapping for Lewis County indicates that all mapped soils on Airport controlled lands meet hydric soil criteria. This factor combined with high relative annual rainfall and aerial photography suggests that potentially jurisdictional drainage ditches and additional wetlands may occur elsewhere on the Airport. Future development will warrant wetland and waters determinations if conducted outside of previously studied areas.

CULTURAL RESOURCES

Previous cultural and historical analyses, including pedestrian surveys and subsurface testing conducted at the Airport have not identified cultural resources of significant concern. Historic runway lighting and a log skid were identified most recently, but the Airport resources were not determined to be significant enough for inclusion in the National Register of Historic Places. Cultural resource professionals who have conducted recent work recommend that additional archaeological and historic analysis of RPZ land at the eastern end of the Airport may be necessary, dependent on the nature and extent of project related work performed in this area. Additionally, discovery of cultural material or human remains in association with any project related activities on Airport property will necessitate contact and consultation with the Washington DAHP, Cowlitz Tribe, and FAA representatives before proceeding.

ENDANGERED SPECIES

Previous analyses, reports, and readily available resource information indicates that listed species and species of concern are unlikely to be found within Airport controlled property or in association with Airport related projects. Listed salmonids and Critical Habitat for these species occur several miles downstream of the Airport. Future increases of impervious area at the Airport and stormwater management activities are the primary nexus for effects to these species. However, the distance to these resources and the likely treatment of stormwater that occurs at the Airport present little connection or effect. The disturbed and managed nature of the Airport lands, absence of mature forest stands and absence of aquatic habitat on the Airport limit the potential for listed species or species of concern to occur at the Airport. A previous no effect determination was prepared for Airport project activities for listed species and critical habitat. Future Airport projects will require additional analysis of effects for ESA

species with the assumption that determinations of no effect will be likely. Due diligence including analysis of project stormwater impacts/effects and botanical surveys of project impact areas should be completed prior to ground disturbances and in addition to other environmental analysis and reporting.

BIOTIC COMMUNITIES

Additional biotic consideration at the Airport includes vegetation clearing and compliance with the Migratory Bird Treaty Act (MBTA). Future development projects that include vegetation removal should conduct this removal activity outside of the nesting period (September 1 – March 1) for migratory birds in western Washington to avoid violation of the MBTA.

AIRSPACE

For the safety of aircraft operations, it is important to protect the airspace around an airport. In this section, airspace around the Airport is briefly reviewed, identifying any obstructions or other issues, which are discussed further in subsequent chapters.

The Airspace Drawing, prepared as part of the ALP set in 2003, illustrates the airspace around the Airport that needs to be protected for air navigation. An Airspace Drawing is prepared in accordance with 14 CFR Part 77, which defines a set of "imaginary surfaces" that should be protected from obstructions to air navigation, when possible. The Part 77 imaginary surfaces help to define the Airport's area of influence and generally encompass the traffic patterns for the runways. Part 77 imaginary surfaces are listed here and a description follows. These imaginary surfaces are pertinent to the land use discussion in the next section.

- Primary Surface
- Approach Surface
- Horizontal Surface
- Transitional Surface
- Conical Surface

PRIMARY SURFACE

The primary surface is at the same elevation as the runway and is longitudinally centered on the runway. Since the runway is paved, the primary surface extends 200 feet beyond each

runway end. The width of the primary surface is dependent on the runway approach. The primary surface width is 500 feet for basic visual runways serving large aircraft (greater than 12,500 pounds) or nonprecision instrument approach runways with greater than $\frac{3}{4}$ -mile visibility minimums, which applies to the Airport today.

APPROACH SURFACE

The approach surface is off the end of the primary surface at each runway end where it extends outward and upward. Visual approaches and nonprecision approaches on a runway exclusively for small aircraft requires a 20:1 approach slope while nonprecision instrument approaches on other runways require a 34:1 slope.

HORIZONTAL SURFACE

The horizontal surface is a horizontal plane at 150 feet above the Airport elevation. This means the horizontal surface at the Airport is 524 feet MSL. The size of the horizontal surface is defined by a set of 10,000-foot arcs from the outer ends of the approach surfaces of Runway 6-24.

TRANSITIONAL SURFACE

The transitional surface helps define where the building restriction line should be located and to what height buildings should be permitted relative to the airfield operations. The transitional surface begins off the sides of the primary surface and approach surface extending upward and outward at a 7:1 slope. The transitional surface ends where it intercepts the horizontal surface or any other surface where a more restrictive elevation is intercepted. For example, at a 7:1 slope, a 35-foot building height would be permitted 245 feet from where the transitional surface begins.

CONICAL SURFACE

The conical surface is an imaginary surface that surrounds the horizontal surface with an inclined plane extending upward and outward from the outer boundary of the horizontal surface at a slope of 20:1 for a horizontal distance of 4,000 feet. This means the conical surface

reaches an elevation that is 350 feet above Airport elevation. Therefore, the conical surface is 724 feet MSL at Ed Carlson Memorial Field-South Lewis County Airport.

OTHER AIRSPACE CONSIDERATIONS

Airspace surrounding the Ed Carlson Memorial Field-South Lewis County Airport is generally clear. However, the FAA Airport Master Record (Form 5010) notes approach obstructions to both Runway 6 and 24 with an approach slope clearance limited to 10:1. Lewis County previously removed these obstructions (wind cone and trees) and will be updating the FAA Airport Master Record in coordination with the FAA and State.

According to the 2003 Airspace Plan for the Airport, there are two areas that penetrate the Part 77 imaginary surfaces—one in the horizontal surface well over a mile south of the airfield, and one to the conical surface an estimated two miles southwest of the runway.

Both runways at the Airport use standard left traffic patterns. Non-standard right traffic patterns are often implemented when obstructions are present, community noise impacts require noise abatement procedures, special aviation activities such as skydiving need to be kept a safe distance from air traffic, environmentally-sensitive areas must be avoided, or other issues need to be mitigated with traffic pattern adjustments. Skydiving activity at the Airport is frequent during the summer with flights and jumps throughout the day, but Airport users operate with standard left traffic patterns. Operational issues with skydiving activity and flight operations are being addressed by Lewis County. Noise complaints regarding aircraft operations have been minimal with recent complaints associated with the transient military helicopter flights up to once daily, which will be discontinued soon as the helicopters will be deploying overseas. The Airport's location is such that it lies west of two Victor Airways (V187 and V23), which are "highways in the sky." A Victor Airway is a corridor of protected airspace defined by radio navigational aids.

Special use airspace that may affect Airport operations is also reviewed as part of an airport planning effort. There is no special use airspace such as a military operations area (MOA) immediately above or around the Airport.

OFF-AIRPORT LAND USE AND DEVELOPMENT

This section identifies the existing land use designations within the vicinity of the Ed Carlson Memorial Field-South Lewis County Airport, and discusses land use compatibility issues that may impact or limit future airport development projects. During the master planning process, it is important to consider off-Airport land use to ensure long-term compatibility with Airport operations. Airport noise levels, height restrictions for facilities, and other safety issues should be considered when planning for area land use changes. According to the Washington State Airport System Plan, “Incompatible land use encroachment issues have led to a number of Airport closures in the state over the past thirty years.”

AREA LAND USE

Exhibit 1E illustrates the land use around Ed Carlson Memorial Field-South Lewis County Airport. Certain adjacent residences are aircraft owners and have through-the-fence (TTF) access to the Airport to use the airfield and fuel facilities.

RURAL AIRPORT OVERLAY REQUIREMENTS

The Washington State Department of Transportation (WSDOT) developed the Airport Land Use Compatible Program to address the “the encroachment of incompatible land use development near and around airports.”¹ The program is reflective of provisions in the 1996 Growth Management Act (GMA), encouraging cities and counties to develop comprehensive plans and regulations that restrict certain types of developments near airports.

South Lewis County has established Rural Airport Overlay Requirements (17.100.110) as part of their codification of County laws and ordinances. Future developments around South Lewis County Airport will be limited by the provisions in these codes (**Exhibit 1F**). The purpose of the codes is to provide adequate setbacks and avoid incompatible developments near the Airport. Major requirements include:

¹ WSDOT Aviation Land Use Compatibility Program, WSDOT website

- Adequate Lateral Setbacks: No multifamily or clustered residential developments or places of public assembly within 500 feet of the centerline or end of the paved runway.
- Approach Surface Setbacks: No structures permitted within 500 feet of the end of the runway. Agricultural and accessory buildings (e.g. garages) may be permitted from 500 – 1,000 feet from the end of the runway.
- Clustering: Land within the lateral and approach setbacks must be considered for property density determinations.
- Notice and Consent to Air Operations: Any new division or use of land within 1,000 feet of the Airport property boundaries will require a provision listed on the Title that the owner consents to the use of the Airport in accordance with the Airport Master Plan and applicable laws.

FINANCIAL INVENTORY

The purpose of this section is to inventory and characterize on-site sources of revenue at the Airport.

Sources of revenues generated on-site at the Airport are limited. They include:

- Land leases
- Hangar leases
- Tie-down fees
- Tenant annual use fees
- Through-the-fence (TTF) annual fees
- Profit of fuel flowage fees

A description of these on-site funding sources follows.

LAND LEASES

Currently, there are eighteen (18) conventional hangar land leases at the Airport. **Table 1B** shows that in 2012, revenue generated from these leases totaled \$9,740.23. However, \$1,019.04 of this total was paid to the Washington State Department of Revenue as Leasehold

Excise Taxes at a rate of 12.84 percent.² Additionally, \$600 of this total was comprised of annual user fees (at a rate of \$100 per annum), which certain tenants paid at the same time as their lease fees. Also, late payment fees of \$25 are shown.

Table 1B. 2012 Land Leases for South Lewis County Airport

Lessee Location	Account #	Lease Amount	Excise Tax	User Fee	Late Fee	Total
Toledo 98591	LL1	\$ 1,451.32	\$ 186.35	\$ 100.00	\$ -	\$ 1,737.67
Toledo 98591	LL2	\$ 475.00	\$ 60.99	\$ 100.00	\$ -	\$ 635.99
Winlock 98596	LL3	\$ 475.00	\$ 60.99	\$ 100.00	\$ -	\$ 635.99
Toledo 98591	LL4	\$ 475.00	\$ 60.99	\$ 100.00	\$ -	\$ 635.99
Toledo 98591	LL5	\$ 325.00	\$ 41.73	\$ -	\$ -	\$ 366.73
Ethel 98542	LL6	\$ 250.00	\$ 32.10	\$ -	\$ -	\$ 282.10
Toledo 98591	LL7	\$ 250.00	\$ 32.10	\$ -	\$ -	\$ 282.10
Toledo 98591	LL8	\$ 439.72	\$ 56.46	\$ 100.00	\$ -	\$ 596.18
Winlock 98596	LL10	\$ 280.00	\$ 35.95		\$ -	\$ 315.95
Ethel 98542	LL12	\$ 470.00	\$ 60.37		\$ -	\$ 530.37
Toledo 98591	LL14	\$ 731.25	\$ 93.89		\$ 10.00	\$ 835.14
Woodland 98674	LL15	\$ 731.28	\$ 93.90		\$ -	\$ 825.18
Toledo 98591	LL16	\$ 419.12	\$ 53.82		\$ 15.00	\$ 487.94
Chehalis 98532	LL17	\$ 159.90	\$ -		\$ -	\$ 159.90
Toledo 98591	LL18	\$ 1,163.60	\$ 149.41	\$ 100.00	\$ -	\$ 1,413.01
Totals		\$ 8,096.19	\$ 1,019.04	\$ 600.00	\$ 25.00	\$ 9,740.23

Source: Lewis County, Real Estate Economics. Note: Figures are annual.

Lewis County does not charge landing fees for outside users of the Airport. Key reasons underpin this policy. The Airport systems manager, a part-time employee, has no administrative means of monitoring or collecting user fees. Moreover, none of the other Lewis County airports (Chehalis/Centralia, Morton, Packwood) charge user fees. However, all business tenants at South Lewis County Airport are charged a \$100 business fee because this can be readily administered. **Table 1C** shows the other 2012 Airport user fees (including grandfathered “through-the-fence” user fees).³ Combining tenant land lease fees and user fees

² Approximately 53 percent of this Leasehold Excise Tax goes to the State General Fund and 47 percent of the tax is returned to the county or city in which the leased property is located.

³ The only through-the-fence agreement at South Lewis County Airport was signed December 1, 2003 between Lewis County and Peterson Estates Homeowners’ Association. The term of the agreement is 20 years and it is due

resulted in a 2012 gross income total of \$11,220.23 for 2012 at South Lewis County Airport. Of this total, the *net* revenue actually flowing to the Airport was slightly under \$9,600.

Table 1C. Other Airport User Fees (2012)

Fee Type	User Fee	
User Fee	\$	100.00
Through-The-Fence Fee	\$	300.00
Through-The-Fence Fee (2 planes)	\$	480.00
Through-The-Fence Fee	\$	300.00
Through-The-Fence Fee	\$	300.00
Total	\$	1,480.00

Source: Lewis County, Real Estate Economics

Selected characteristics of land leases at South Lewis County Airport are now described. Corresponding hangar buildings were privately developed. They are typically on 30-year ground leases. Although privately owned, these buildings will ultimately revert back to the Airport at the end of their long-term leases.

All commercial tenants are charged \$0.19 cents per square foot per year. All private aircraft tenants are charged \$0.16 cents per square foot per year. These rates are considered each five (5) years by the BOCC for adjustment as per RCW. These rates only apply to the land “footprint” of each hangar building. No land rent is charged for immediate taxiways in front of (or around) each building.

Because of cost, the Airport does not contract for full land valuation appraisals every five years.⁴ There is one exception. The only land lease that is annually adjusted as per the Seattle Consumer Price Index is land lease #18, Darrell Peterson, owner of Express Aircraft.

to expire December 1, 2023. This agreement entails the adjacent air-park subdivision containing 20 lots, five of which have hangars.

⁴ In contrast, most commercial leases typically incorporate yearly lease rate “step-ups” indexed to the Consumer Price Index.

HANGAR LEASES

Table 1D shows 2012 lease revenues for the one County-owned T-hangar as well as the County-owned Rocky Hangar and one tiedown. In 2012, these County buildings (plus the one tiedown) generated only about \$7,300 in gross income with about \$6,500 of *net* revenue actually accruing to the Airport.

The other three Airport T-hangar buildings (also with seven units each) are privately owned. All of the Airport T-hangars are leased and no vacancies exist.

Table 1D. Hangar Leases (2012)

Lessee Location*	Account #	Lease Amount	Excise Tax	Late Fee	Total
Toledo	Garage Space	\$ 540.00	\$ 69.34	\$ -	\$ 609.34
Toledo	9A	\$ 660.00	\$ 84.74	\$ -	\$ 744.74
Toledo	9B	\$ 660.00	\$ 84.74	\$ -	\$ 744.74
Mossyrock	9C	\$ 550.00	\$ 70.62	\$ -	\$ 620.62
Castle Rock	9D	\$ 660.00	\$ 84.74	\$ -	\$ 744.74
Castle Rock	9E	\$ 660.00	\$ 84.74	\$ -	\$ 744.74
Toledo	9F	\$ 350.00	\$ 44.94	\$ 10.00	\$ 404.94
Olympia	9G	\$ 660.00	\$ 84.74	\$ -	\$ 744.74
Longview	Rocky Hangar	\$ 750.00	\$ 96.30	\$ 5.00	\$ 851.30
Winlock	Rocky Hangar	\$ 750.00	\$ 96.30	\$ 25.00	\$ 871.30
Ajo, AZ	Tie Down	\$ 180.00	\$ -	\$ 5.00	\$ 185.00
Totals		\$ 6,420.00	\$ 801.22	\$ 45.00	\$ 7,266.22

Source: Lewis County, Real Estate Economics. *All located in WA unless otherwise noted.

TIEDOWN FEES

The Airport charges longer term users of tiedowns a fee of \$180/year. This translates to \$15/month. Occasional users are charged at the rate of \$1.00/day or \$5.00/week. However, if such short term users purchase fuel, no daily or weekly tiedown charge is levied.

FUEL FLOWAGE REVENUES

South Lewis County Airport generates a small profit on the sale of aviation fuel. The current price charged at South Lewis County Airport (KTDO) is \$5.95 per gallon. The Airport nets a seven percent (7%) mark-up, or about \$0.42/ gallon. The Airport sells an average of 6,000 gallons of 100 LL per year. The Airport only sells 100LL Avgas.

The Airport systems manager continually monitors Avgas rate charges at other airports in the region. However, particular attention is paid to competing rates at Chehalis/Centralia Airport (KCLS) and Southwest Washington Regional Airport (KKLS—Kelso). **Table 1E** shows 2013 prices for 100LL Avgas at competing airports within 50 miles of South Lewis County Airport.

Table 1E. 100LL Fuel Prices (within 50 miles)

Airport	ID	Location	Price /Gallon
South Lewis County Airport	KTDO	Toledo, WA	\$ 5.95
Chehalis-Centralia Airport	KCLS	Chehalis, WA	\$ 5.80
Southwest Washington Regional Airport	KKLS	Kelso, WA	\$ 5.95
Olympia Regional Airport	KOLM	Olympia, WA	\$ 6.39
Spanaway Airport	S44	Spanaway, WA	\$ 6.33
Scappoose Industrial Airpark	KSPB	Scappoose, OR	\$ 5.55
Pierce County Airport--Thun Field	KPLU	Puyallup, WA	\$ 6.08
Sanderson Field Airport	KSHN	Shelton, WA	\$ 5.95
Tacoma Narrows Airport	KTIW	Tacoma, WA	\$ 5.67
Astoria Regional Airport	KAST	Astoria, OR	\$ 5.75
AVERAGE \$ CHARGED			\$ 5.94

Source: South Lewis County Airport Manager, Real Estate Economics; June 2013 fuel prices

SUMMARY—CURRENT RATES AND CHARGES

A summary of current *rates and charges* at South Lewis County Airport is presented below:

- Ground leases rates for privately owned Airport buildings--\$0.16 per square foot/year
- Airport-owned T-hangar bay lease rates--\$660/year (or \$55.00/month)
- Airport tiedown fees--\$180/year (\$15/month)

- Airport tenant user fees--\$100/ year
- Airport Avgas price--\$5.95/gallon

AIRPORT REVENUE SOURCES OF FUNDS

The dominant *actual* source of funds for South Lewis County Airport comes from the internal transfer of funds from Lewis County. In contrast, the major *budgeted* source of Airport revenues is shown to come from the FAA. However, dollars from the FAA are actually grants for specific projects—FAA typically funds up to 90% of airport improvements with WSDOT and Lewis County funding the remaining 10%. This means that the County’s budgeted amount for FAA revenues may substantially differ from actual revenues if planned improvements are postponed. For example, the County had budgeted for a project at the Airport in 2010 to clear a 14-acre parcel on the south side of the runway. This project required the completion of an Environmental Assessment and obtaining a USACE Individual wetland fill permit. A lack of available mitigation land and stalled USACE permitting efforts delayed this project for the last three years. Consequently, the FAA decided to postpone any funding in the project until the completion of the master plan update.

Table 1F shows Airport budgeted and actual revenue trends by source over the past three years. As indicated, Lewis County directly transfers 46 percent of actual total revenues to the Airport. Fuel sales and leases comprise an additional 24 percent and 8 percent, respectively. It is estimated that at a 7 percent profit rate on fuel sales, average annual net profits were approximately \$3,700 during each of the past three years.

Table 1F. Trends in Airport Revenue by Source, 2010-2012

	2010		2011		2012		Averages		Percentages	
	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual
FAA Airport Improvement	\$ 142,500	\$ 86,534	\$ 292,460	\$ 20,667	\$ 250,000	\$ 36,911	\$ 228,320	\$ 48,037	58.4%	22%
USDOT/WSDOT Airport Improvement	\$ -	\$ -	\$ -	\$ -	\$ 5,000	\$ -	\$ 1,667	\$ -	0.4%	0%
WSDOT Aeronautics	\$ 3,750	\$ 269	\$ 8,007	\$ 544	\$ -	\$ 1,479	\$ 3,919	\$ 764	1.0%	0%
Fuel Sales--100 LL	\$ 20,000	\$ 42,160	\$ 40,000	\$ 60,654	\$ 40,000	\$ 54,194	\$ 33,333	\$ 52,336	8.5%	24%
SPC & Facility Leases	\$ 21,000	\$ 18,448	\$ 21,000	\$ 17,657	\$ 21,000	\$ 16,160	\$ 21,000	\$ 17,422	5.4%	8%
Miscellaneous Revenues	\$ -	\$ 65	\$ 30	\$ 95	\$ 110	\$ 108	\$ 47	\$ 89	0.0%	0%
Current Expense--Transfers In	\$ 104,444	\$ 104,444	\$ 102,900	\$ 102,900	\$ 100,000	\$ 100,000	\$ 102,448	\$ 102,448	26.2%	46%
Community Development--Transfers In	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%	0%
Capital Facilities--Transfers In	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%	0%
TOTALS	\$ 291,694	\$ 251,920	\$ 464,397	\$ 202,516	\$ 416,110	\$ 208,851	\$ 390,734	\$ 221,096	100%	100%

Source: Lewis County, Real Estate Economics