Chapter 9. Environmental Overview

Chapter 9. ENVIRONMENTAL OVERVIEW

This environmental overview directly or indirectly addresses each of the 21 environmental impact categories listed in Federal Aviation Administration (FAA) Order 5050.4A, *Environmental Handbook*. These categories are grouped into ten broadly defined categories which include: water resources, biotic resources, hazardous/solid waste, economic resources, Section 303(c) resources, air quality, energy, noise, construction, and light emissions.

The purpose of the environmental review is to identify potential environmental problems that may arise from implementation of the proposed Master Plan development. While this overview considers each of the listed categories in FAA Order 5050.4A, it does not constitute an Environmental Assessment (EA) or an Environmental Impact Statement (EIS). This overview is a survey of existing conditions in the given "study area" and identifies any potential problems by resource category.

The "study area", shown in ***Exhibit 9-1, Environmental Overview Study*** *Area*, is a broadly defined area that delineates the maximum possible area that may be impacted by the proposed Master Plan developments. It is not based on one single alternative, but is rather a compilation of all possible alternatives, and is geometrically delineated for general survey. The Master Plan proposed developments are shown in ***Exhibit 9-2, Proposed Airport Development***, and include:

- 4,800 ft extension of Runway 6R/24L
- 4,100 ft extension of Runway 18/36
- Construction of a parallel 11,000 ft Runway 6/24
- Expansion of the Emery Cargo Facility
- Relocation of US 40
- Relocate Terminal Drive
- Relocate Airport Access Road
- Construct New I-75 Interchange
- Relocate Ginghamsburg Frederick Road

1. WATER RESOURCES

(1) Groundwater

The predominant aquifer system in the Miami Valley is the Great Miami Buried Valley Aquifer (GMBVA) or BVA. This extensive aquifer provides the bulk of the water to the area. It is extremely complex and the aquifer locations and extents are difficult to determine on a local level (due to ice-age deformations). Ten different hydrogeologic

environments, or sub-aquifers, have been identified in the Miami Valley. Of the ten, only two may be present in the DAY study area. One is located in the Dayton area, which may extend north into the study area, and the other is in the Tipp City area, which may extend south into the study area.

The proposed runway construction would alter large portions of the topography in the area. These changes may possibly affect any aquifers located under the airport and their ability to naturally recharge their water.

(2) Surface Water

DAY is located approximately seven miles north of the confluence of the Great Miami River and the Stillwater River and is located in the Upper Great Miami River Watershed (See *Exhibit 9-3, Existing Water Resources*). The Great Miami Watershed is composed of 299 lakes, 2,887 river miles, and drains approximately 12,756 acres of land.

The flow of the Stillwater River is controlled by the Englewood Dam. The water behind the dam will periodically back up and form temporary pond-like waterbodies on the Englewood Reserve. The Great Miami River has similar flood control dam and reserve directly east of the airport.

Located on airport property is Mill Creek, a hybrid water course that is partially natural and partially man-made. The creek presently originates south of the airport in Vandalia and flows in a northwestern direction. The creek handles some portion of stormwater and deicing runoff created at the airport. Further study would be necessary to determine any environmental impacts to Mill Creek.

Proposed developments at DAY would not affect the Stillwater River or the Great Miami River, but may have short term effects on water quality, particularly sediments, during and shortly after precipitation during the construction phase. Construction of a third parallel runway and mid-airfield developments may potentially impact Mill Creek by requiring large portions of the creek to be channeled or placed in culverts.

(3) Drinking Water

Airport drinking water comes from underground sources and is supplied by the City of Dayton. The water originates from two separate well-fields in the area - the Great Miami

Well-field and the Mad River Well-field. Based on a three month period in Spring 1999, the airport consumed approximately 132,329 gallons of water per day, which is a representative average of the Winter and Summer seasons.[1]

As the number of passengers served by the airport increases, it can be expected that the drinking water demand will increase by a proportional amount. Coordination through the City of Dayton would ensure the City's ability to meet future airport demands.

(4) Sanitary Wastewater/Stormwater

Sanitary wastewater is transported via two mains away from the airport. The airport tributaries discharge to the Vandalia Collection System which, in turn, is a tributary to the Tri-Cities Wastewater Treatment Facility.

Stormwater collection is managed through the use of a Stormwater Management Plan (SWMP), which documents existing facilities and handling procedures.

Stormwater run-off from areas where aircraft are deiced will be contaminated with aircraft deicing agents such as propylene glycol. This stormwater has a separate collection system. The airport has a deicing agent recovery system, which recovers approximately 68 percent (1998-1999) of all propylene glycol sprayed.[2] The system serves 44 acres of aircraft deicing areas (during the winter). It collects and stores the effluent in lagoons (10 million gallon capacity), and discharges the water to a Dayton wastewater treatment facility.

The proposed airport expansion includes many projects that will increase impermeable surface area thereby increasing surface water runoff. Stormwater runoff containing glycol and other effluents could degrade water quality if not treated prior to discharge to surface or groundwater resources. The increased surface/stormwater runoff would need to be managed through the increased construction and use of detention basins, culverts, and an updated SWMP.

(5) NPDES Permits

National Pollutant Discharge Elimination System (NPDES) permits have been issued for four facilities located within the study area--Delta Airlines (OH0071781), Emery

[1] Information provided by telephone by the Department of Aviation, Dayton International Airport, August 16, 1999.
[2] Information provided by telephone by the Department of Aviation, Dayton International Airport, August 16, 1999.

Worldwide (OH152389102), McCauley Propeller Systems (OH0118214), and Delphi/GMC Automotive Plant (OH0009466). Additionally, the airport has a NPDES permit (1II00029) issued by Ohio EPA that covers deicing fluid discharges.

As operations grow, new or updated NPDES permits may be required to accommodate the increased use of fuels and deicing agents. Permits will also be needed for sediment discharges and erosion caused by construction activities.

(6) Floodplains

Numerous floodplains exist within the DAY study area (See **Exhibit 9-4**, *Existing Floodplains and Wetlands*)[3]. Most of these floodplains are associated with the Stillwater River and the Great Miami River. However, one floodplain exists along Mill Creek and extends from the southwestern portion of the air cargo area in a northwestern direction along the creek. The Mill Creek floodplain may be potentially impacted by expansion of the air cargo area and also by the construction of the third parallel runway. Mitigation of the potential floodplain impacts would seek to maintain water storage capacity of Mill Creek. Further study would be necessary to determine the impacts of airport expansion on these floodplains.

(7) Wild and Scenic Rivers

There are no Federally protected Wild and Scenic Rivers located within the study area.

Located in the western portion of the study area is the Stillwater River, which is designated as an Ohio State Scenic River (October 1980). The scenic segment begins to the northwest in Darke County and continues to the Englewood Dam, located between Englewood Reserve and Aullwood Park (See Exhibit 9-3). Approximately four miles of scenic river lie within the study area. The remaining portion of the Stillwater River (from Englewood Dam to the confluence with the Great Miami River) is designated as recreational (July 1975).

The Stillwater River would not be physically encroached upon by airport developments, but may be affected by noise patterns generated from new runway configurations and flight tracks.

[3] Map information provided by the Miami Valley Resource Planning Commission (MVRPC), August 1999.

(8) Coastal Zone Management and Coastal Barriers

There are no Coastal Zone Management Areas or Coastal Barrier Resources located within the study area.

2. BIOTIC RESOURCES

(1) Wetlands

Numerous wetlands exist in the study area (See ***Exhibit 9-4, Existing Floodplains and Wetlands***). Information provided by MVRPC indicates that approximately 60 wetlands are currently located within the study area. Five of these indicated wetlands may potentially be physically impacted by the developments at DAY. The data indicates that two wetlands are located near the air cargo area and may be affected by the proposed Emery Cargo Facility expansion. Further, two wetlands may be located northwest of the cargo area and Runway 6L/24R and may be impacted by the proposed construction of the third parallel runway. The other potential wetland may be located north of GA Center 1 and may be affected by future expansion in that area. Prior to any construction, a wetlands delineation survey would determine the precise location of any existing wetlands on-airport property. Mitigation of potential wetlands impacts from development would be coordinated through the U.S. Army Corps of Engineers (USACOE).

(2) Biotic Communities

Located within Aullwood Park is the Aullwood Audubon Center. The sanctuary belongs to the National Audubon Society and is privately owned. A variety of birds, reptiles, and insects are housed there for public display, but no State or Federal protected species reside at the center.

The Aullwood Audubon Center would not be physically encroached upon by airport development, but may be affected by the noise patterns generated from any new runway configurations and flight tracks.

(3) Threatened and Endangered Species of Flora and Fauna

The DAY study area is located in the United States Fish and Wildlife Service (USFWS) Region 3. In Montgomery County, there are potentially two Federal and State endangered species that may be impacted by the proposed development - the Indiana Bat (Myotis sodalis) and the Running Buffalo Clover (Trifolium stoloniferum), and one threatened

species, the Peregrine Falcon (Falco peregrinus). In Miami County, there is potentially one Federal and State endangered species, the Indiana Bat, that may be impacted by the proposed development. Additionally, according to the Ohio Division of Wildlife, District Five, Barn Owls (Tyto alba) may also reside in the area, but their presence can not be confirmed.

Airport developments may impact areas inhabited by the endangered species previously mentioned. Prior to any construction, a habitat survey would need to be conducted during the environmental study.

3. HAZARDOUS/SOLID WASTE

(1) Hazardous Materials

Approximately 50 different sites were identified that are associated with hazardous materials. Roughly half of the sites lie off of airport property along the periphery of the study area. They are concentrated mainly to the east and southeast of the airport in Vandalia, Ohio. The other half are primarily located along the outer property edge of the airport (in aviation-related businesses) with seven found on-airport.

The seven hazardous materials sites found on-airport are: Delta Airlines, PSA Airlines, US Air GSE Department, Ryan International, Stevens Aviation, McCauley Propeller Systems, and Emery. These facilities, along with the airport, handle hazardous materials normally associated with aviation operations (fuel, lubricants, paints, etc). In addition, Emery occasionally ships approved hazardous materials.

The proposed airport expansion would allow for operations to increase thereby increasing the amount of hazardous materials used for routine aviation activities. Construction and land acquisition may affect some existing hazardous materials sites previously mentioned. An Environmental Due Diligence Audit (EDDA) would need to be conducted prior to any developments. The EDDA would identify and assess any hazardous materials sites within the study area.

(2) Solid Waste

The airport contracts to collect, transport, and dispose of its solid waste. All trash generated by passenger and normal airline activities is removed from the airport. No known landfills or dumps that store traditional solid waste currently exist on airport property.

A construction staging area is located on the eastern edge of airport property. The staging area contains pavement debris and other bulk aggregates associated with construction activities. The storage area is located near the intersection of North Dixie Drive and McCauley Drive.

The proposed developments should not affect the construction materials storage area. The EDDA would help identify any potential solid waste issues in the study area.

4. ECONOMIC RESOURCES

(1) Land Use

Based on existing land use maps (See ***Exhibit 9-5, Existing Land Use***), open land is the predominant type of land in the study area. Open land is primarily farm land and open fields and is prevalent to the north, east, and west of the airport. Land use south of the airport is a combination of residential, industrial, institutional, and commercial uses.

Development to the north and northwest of the airport may impact open land which may contain farms and lands devoted to agricultural uses. The assessment of prime and unique farmland would determine if there would be any significant impacts caused by developments.

(2) Social and Economic Resources

For purposes of this environmental overview, the Dayton International Airport is considered to be located within the Dayton-Springfield, Ohio Metropolitan Statistical Area, or MSA (See Chapter 2). The Dayton MSA's population has remained steady over the last ten years, with predictions of static growth in the future. Employment and personal income are considered to be on par with other Midwestern cities of comparable size.

The proposed airport expansion at DAY would directly impact the local economy by expanding services at the airport (i.e., Emery Worldwide) and by creating additional jobs and increasing revenue in all sectors of the airport economy, such as construction and customer service. The increase in passenger capacity would also directly affect the local economy with purchases of goods and services in the area. The purchase of construction materials and other goods to support the airport expansion would indirectly benefit the local economy.

Airport developments may require the removal or demolition of existing structures or businesses in the area. Homes impacted by noise may be sound insulated or acquired by the airport and homes and businesses located near the airport may need to be acquired to allow for airfield expansion.

(3) Surface Transportation

Access to the airport is primarily provided by Interstate 70 and Interstate 75 (See ***Exhibit 9-6, Existing Roadways***). Passengers achieve access from I-70 through the Airport Access Road, which eventually turns into Terminal Drive. Access to the airport can be achieved through Terminal Drive which intersects with US 40 and I-70. Terminal Drive splits into five lanes in front of the passenger terminal.

The airport is bounded by US 40 to the south, North Dixie Drive to the east, Lightner Road to the north, and Dog Leg Pike, Old Springfield Road, and Peters Pike to the west and north.

Extension of Runway 6R/24L would require the relocation of US 40 and reconfiguration of Airport Access Road and Terminal Drive. The extension of Runway 18/36 would require the relocation of Ginghamsburg-Frederick Road. Construction of new Runway 6L/24R would involve the closure of a portion of Old Springfield Road and the creation of a new Bypass Connector Road. It is proposed to create a new interchange with I-75 and relocated Ginghamsburg-Frederick Road. Additional developments would also affect minor roadways on airport property.

The airport developments may also cause an increase in traffic in the vicinity. Increasing numbers of passengers would create increasing numbers of vehicles using the local infrastructure. The expected increases in traffic would be accounted for and managed in the planning phase, prior to construction.

5. SECTION 303(C) RESOURCES

(1) Section 303(c) Lands

Four municipal parks are located within the southeastern portion (Vandalia) of the DAY study area (See ***Exhibit 9-7, Existing Section 303(c) Resources***). Helke Park and Victory Park are situated less than one mile south of airport property. Jeffers Park and Robinette Park are situated less than one mile east of the airport.

Englewood Reserve and Aullwood Park are located in the southwestern portion of the study area. The parks are affiliated with Five Rivers MetroParks, which is a political subdivision of the State of Ohio.

These areas would not be encroached upon by physical development. However, they may be affected by noise patterns generated by new runway configurations and flight tracks. Environmental analysis may require additional evaluation of aircraft noise using the guidelines of the Federal Interagency Committee on Aircraft Noise (FICAN).

(2) Prime and Unique Farmland

Farmland that is considered prime or unique exists primarily to the north and west of the airport. Prior to any development, an assessment would be conducted by the Natural Resources Conservation Service (NRCS) to determine the acreage and location of any prime or unique farmland in the study area.

(3) Historic, Archaeological, Architectural Resources

After database review of historic sites on the National Register of Historic Places (NRHP), no known historic structures are located in the study area. Further coordination with the State Historic Preservation Officer (SHPO) will help in making the ultimate determination of the presence of historic, archaeological, and architectural resources.

6. AIR QUALITY

The airport is located in Montgomery and Miami Counties of west central Ohio, which have been designated by the U.S. Environmental Protection Agency as an ozone (O_3) maintenance area until 2015. The principal concern for the airport with regard to air quality would be that the

Proposed Federal Action would be limited to a net increase in nitrous oxides (NOx) or volatile organic compounds (VOC) emissions of 100 tons per year, each. Nitrous oxides and volatile organic compounds are precursors to ozone development.

Federal regulations (FAA Order 5050.4A, Airport Environmental Handbook) require that an air quality analysis be performed for all projects sponsored by the Federal government. Several project-related activities could cause a net increase in emissions that may threaten to exceed the 100 ton threshold - an increase in aircraft operational levels above the future baseline level, construction of runways and associated taxiways, and increases in vehicular traffic due to the Proposed Federal Action. If it is found that the net increase in emissions of NOx or VOC may potentially exceed the 100-ton per year threshold, further analysis may be required along with possible mitigation of the alternatives.

A meeting with the Ohio EPA and other appropriate Federal and State agencies would be required to discuss analysis methodology and modeling approach. At that time, the specific model assumptions would be discussed and the evaluation criteria would be identified to ensure compliance with the Ohio State Implementation Plan.

7. ENERGY SUPPLY

Electricity and natural gas are supplied to the airport by Dayton Power & Light (DP&L). Based on the month of July 1999, daily natural gas consumption totaled 3,187 cubic feet and electricity usage totaled 40,608 kWh.[4] July is a peak month for energy consumption and normal usage can be expected to be somewhat lower.

It can be reasonably assumed that the energy requirements for the airport would increase proportional to the number of enplanements and air cargo aircraft operations and to the extent of airport development. Prior coordination with DP&L would verify their ability to meet the airport's future needs.

8. NOISE

It is expected that with new developments, there will be new noise impacts. The extent of the noise impacts, or noise contours depend strongly on runway configurations, takeoff procedures, and flight paths. Four phases of airfield development were evaluated:

[4] Information provided by facsimile by Department of Aviation, Dayton International Airport, August 16, 1999.

- Existing Airfield
- Phase One - Extension of Runway 6R/24L
- Phase Two - Extension of Runway 18/36
- Phase Three - Addition of new Runway 6L/24R

Exhibit 9-8a, Existing Conditions Noise Contours, shows noise levels associated with existing conditions at DAY. **Table 9-1**, *Preliminary Noise Contour Impacts*, shows the total land area affected by existing conditions and each of the three phases of development by noise contour interval. Approximately 13.27 square miles (mi^2) of land surrounding the airport experience noise levels of 65 DNL and greater.

Table 9-1 – Preliminary Noise Contour Impacts

		Area (mi^2)
Existing Airfield	65-70 DNL	7.43
	70-75 DNL	3.50
	75+ DNL	2.34
	TOTAL	**13.27**
R/W 6R Extension (Phase 1)	65-70 DNL	6.38
	70-75 DNL	4.05
	75+ DNL	2.36
	TOTAL	**12.79**
R/W 6R &18 Extension (Phase 2)	65-70 DNL	7.11
	70-75 DNL	3.58
	75+ DNL	2.52
	TOTAL	**13.21**
New 3rd Parallel Runway (Phase 3)	65-70 DNL	11.31
	70-75 DNL	4.67
	75+ DNL	3.09
	TOTAL	**19.07**

Source: Landrum & Brown.

Exhibit 9-8b, Phase One Noise Contours, shows the estimated noise contours associated with the Runway 6R/24L extension. The extension would impact areas located to the south and southwest of the runway. Approximately 12.79 mi^2 of land surrounding the airport would experience noise levels of 65 DNL and greater.

Exhibit 9-8c, Phase Two Noise Contours, shows the estimated noise contours associated with the Runway 18/36 extension. The extension would impact areas located to the north of the runway. Approximately 13.21 mi^2 of land surrounding the airport would experience noise levels of 65 DNL and greater.

Exhibit 9-8d, Phase Three Noise Contours, shows the estimated noise contours from the addition of Runway 6L/24R. The new runway would impact areas generally to the southwest and northeast of the runway. Approximately 19.07 mi^2 of land surrounding the airport would experience noise levels of 65 DNL and greater.

Under Federal guidelines, areas located within the 65 DNL and greater noise exposure contour would be considered to be impacted. Detailed noise analysis, under a FAR Part 150 Study Update, would more accurately assess the noise contours and the areas being impacted and mitigation.

9. CONSTRUCTION

Construction of the various projects at the airport may create an impact to the surrounding environment. The two primary impacts of concern are soil erosion and air quality. Soils eroded from exposed areas may impact local waterbodies through runoff and increased sedimentation. Erosion would be mitigated through best management practices and erosion control procedures (physical barriers, watering, etc). Emissions from construction vehicles may impact local air quality. These emissions would be kept to a minimum through the use of best management practices and adherence to local, state, and Federal air pollution regulations.

10. LIGHT EMISSIONS

The aircraft deicing areas and the air cargo area have substantial outdoor illumination. With the expansion of either of these areas, the area under night illumination may increase. Light emissions associated with runway development are normally attributed to marker lights and navigational aids, such as MALSR and ALSF. The light beam paths from these lighting systems are generally oriented towards aircraft in the air. Prior to any developments at the airport, the potential light impacts to surrounding communities would be assessed.

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