5.6 WATER QUALITY

Pursuant to the Council on Environmental Quality (CEQ), 40 CFR §1502.16, this Environmental Impact Statement (EIS) discloses specific and potential impacts to various environmental resource categories as defined in Appendix A of Federal Aviation Administration (FAA) Order 1050.1E and Chapter 7 of FAA Order 5050.4B. This section describes the existing conditions of drainage basins; land characteristics; airport operations and Best Management Practices (BMPs); and regulatory requirements that are related to water quantity and quality at Port Columbus International Airport (CMH or Airport).

5.6.1 EXISTING CONDITIONS: 2006

5.6.1.1 Drainage Basins [1, 2]

CMH is located within the Big Walnut Creek drainage basin. Stormwater drainage from CMH discharges into four receiving streams: Turkey Run, Mason Run, Big Walnut Creek, and Alum Creek. Approximately five miles downgradient of CMH, Turkey Run flows into Mason Run, which ultimately discharges into Big Walnut Creek.

Big Walnut Creek, which originates north of CMH, is located on the eastern boundary of CMH and flows in a southerly direction. It receives flow from a series of internal outfalls and open channels on the north and southeast sides of the Airport.

The drainage network discharging to the lower reach of Turkey Run originates at Stelzer Road, west of Runway 10L/28R. It flows southward under International Gateway, then enters a box culvert underneath existing Runway 10R/28L. South of Runway 10R/28L, the box culvert drains into an open channel. Additional drainage from the western portion of CMH enters the open channel south of the box culvert.

The drainage network discharging to the lower reach of Mason Run originates on the south side of Runway 10L/28R. Mason Run flows southeast under International Gateway to a series of box culverts passing under Runway 10R/28L and under former Air Force Plant 85 (currently the Columbus International Aircenter Complex (CIAC)). Mason Run is enclosed for approximately 2,000 feet under former Air Force Plant 85 until it leaves the Air Force Plant 85 location on the southern boundary.[3]

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1 Information obtained from the 2007 Stormwater Management Master Plan for the Port Columbus International Airport, unless otherwise noted.

2 Resource International, Inc., *Port Columbus International Airport, Stormwater Management Master Plan*. Columbus, Ohio. Resource International, Inc. 2005.

3 Earth Tech, Inc., *Environmental Baseline Survey for Air Force Plant 85*, Alexandria, VA. Earth Tech, Inc., 1996.

Approximately 50 acres of CMH property on the southwest corner of the Airport drains through a series of off-site storm sewers into Alum Creek. Alum Creek is located west of the Airport and flows in a southerly direction. Included in this area are residences that may be purchased by the Airport.

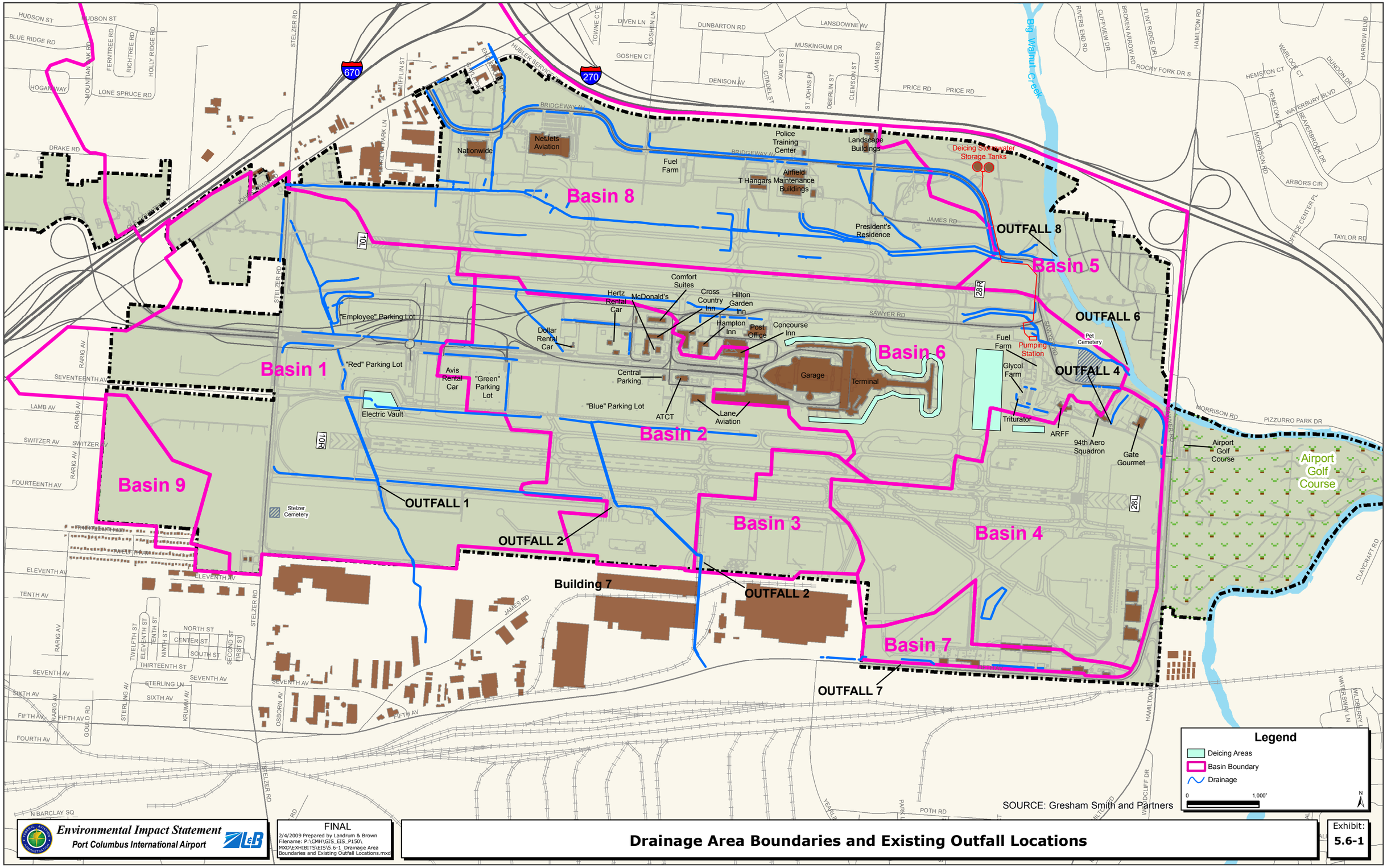
The CMH property is divided into nine drainage areas. **Exhibit 5.6-1, *Drainage Area Boundaries and Existing Outfall Locations,*** identifies the drainage area boundaries and existing outfall locations. **Exhibit 5.6-2, *Subwatershed Boundaries for the CMH Receiving Streams,*** identifies subwatershed boundaries for the receiving streams. Airport drainage basins and outfalls are described in more detail below. Outfall locations are defined by the coordinates specified in the CMH National Pollutant Discharge Elimination System (NPDES) permit. The NPDES permit was issued on July 15, 2002 and became effective August 1, 2002. The NPDES permit expired on July 31, 2007. In order to receive authorization by the Ohio Environmental Protection Agency (Ohio EPA) to discharge beyond the expiration date of the permit, a permit application renewal was submitted in January 2007 and the Columbus Regional Airport Authority (CRAA) continues to perform operations in accordance with the requirements set forth in the expired permit until a new permit is issued. Additional discussions regarding the facility NPDES permit and other applicable regulatory requirements are included in the section titled *Regulatory History and Framework*.

DRAINAGE BASIN 1

This basin includes areas that drain into the lower reach of Turkey Run. The northernmost areas flow through storm sewers into the box culvert under Runway 10R/28L. The point where the box culvert discharges into Turkey Run south of the runway is designated as Outfall 001. The southernmost areas of Basin 1 flow via overland flow into Turkey Run south of Outfall 001. The area is located on the western boundary of CMH and is bisected by Stelzer Road. The total drainage area of Drainage Basin 1 is approximately 546 acres, of which 29 percent is impervious. The area includes the intersection of International Gateway and Stelzer Road, rental car agency buildings, parking lots, and the Runway Protection Zone (RPZ) for Runway 10R/28L.

DRAINAGE BASINS 2 AND 3

These basins include the areas that drain into the segment of Mason Run on the south side of the Airport. Drainage Basin 2 is located on the south central portion of CMH and drains runoff from International Gateway, rental car facilities, parking lots, hotels, and service buildings. The basin also includes portions of Runway 10R/28L, Taxiways B and C, and the former Air Force Plant 85. The total drainage area of Basin 2 is approximately 263 acres, of which 58 percent is impervious. Stormwater from upper portions of Basin 2 discharges through Outfall 002 into an open ditch south of Taxiway B. The stormwater collected in the open ditch and the remainder of Basin 2 discharges into a storm sewer that also receives the drainage from Basin 3.



Environmental Impact Statement
Port Columbus International Airport

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2/4/2009 Prepared by Landrum & Brown
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Drainage Area Boundaries and Existing Outfall Locations

Exhibit: **5.6-1**

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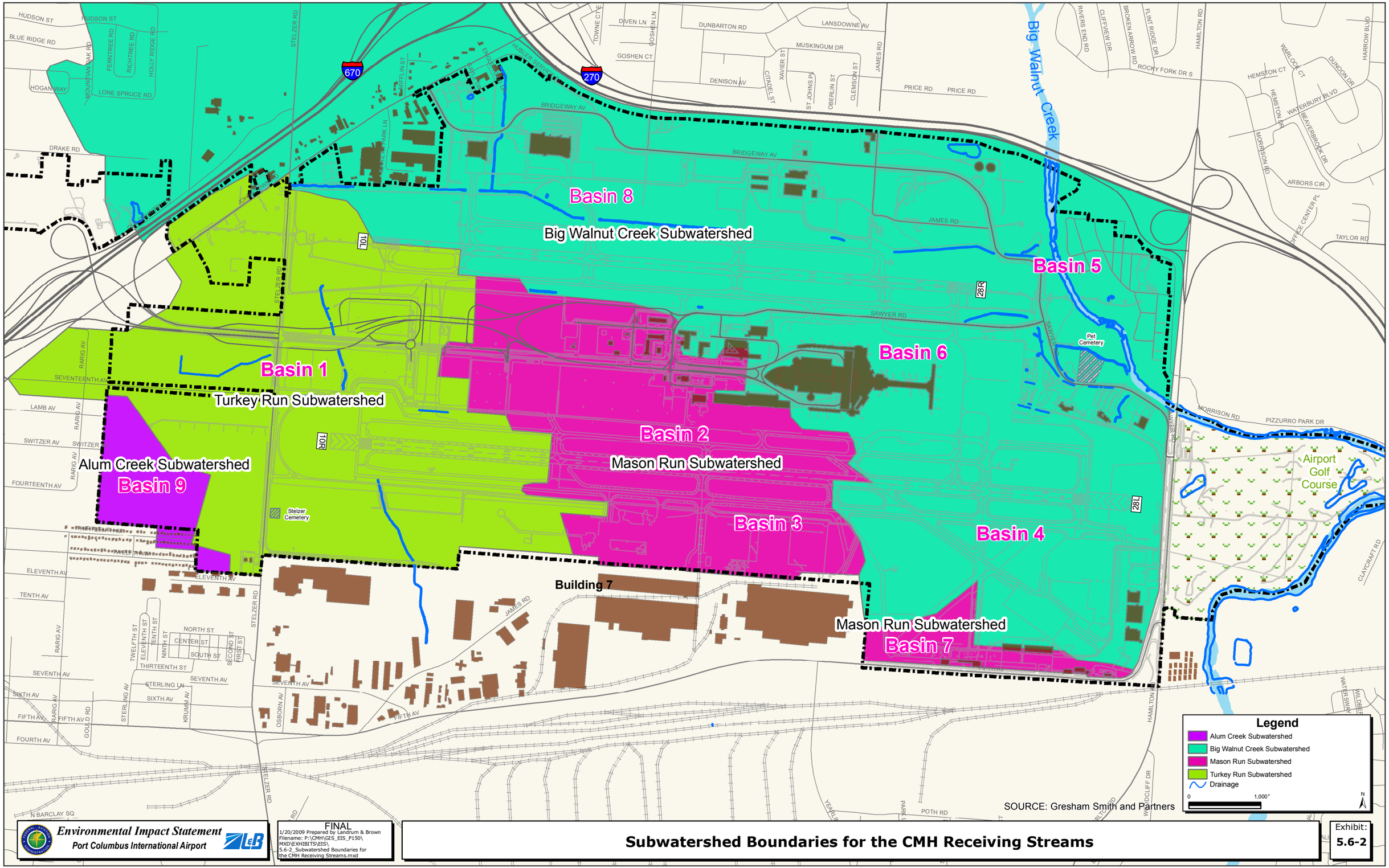

Environmental Impact Statement
Port Columbus International Airport

FINAL
1/20/2009 Prepared by Landrum & Brown
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Subwatershed Boundaries for the CMH Receiving Streams

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Drainage Basin 3, located southeast of Basin 2, drains runoff from portions of Runway 10R/28L, Taxiway B, and the former Air Force Plant 85. Drainage piping conveys flow under Runway 10R/28L and former Air Force Plant 85 to the storm sewer conveying the drainage from Basin 2. The total drainage area of Basin 3 is approximately 69 acres, of which 72 percent is impervious.

Historically, there has been a problem with flooding in the City of Whitehall (south of CMH and Drainage Basins 1, 2, and 3). The actual flood problems have not been well documented, but it is known that flooding occurs at the confluence of Turkey Run and Mason Run, and upstream of a Mason Run culvert on the southern boundary of Whitehall. Additional stormwater controls could be imposed on the Airport to reduce the potential for flooding in this area, if determined necessary by the City of Columbus.

DRAINAGE BASIN 4

This basin includes areas that drain into Big Walnut Creek through Outfall 004. The area is located on the southeastern portion of CMH property and drains runoff from Runway 10R/28L, aprons, maintenance facilities, and tenant hangars. The total drainage area of Basin 4 is approximately 274 acres, of which 51 percent is impervious.

DRAINAGE BASIN 5

This basin is an area located in the northeast corner of the Airport, and includes primarily grass surfaces that drain into Big Walnut Creek via overland flow. The total drainage area of Basin 5 is approximately 172 acres, of which eight percent is impervious.

DRAINAGE BASIN 6

This basin includes areas that drain into Big Walnut Creek through Outfall 006 and via overland flow. Drainage Basin 6 is located on the eastern portion of CMH and drains runoff from Runway 10L/28R, the terminal building, terminal apron areas, parking garage, Lane Aviation facilities, hotels, and the post office. Drainage piping conveys flow under Sawyer Road and into an open channel, where flow discharges into Big Walnut Creek through Outfall 006. The total drainage area of Basin 6 is approximately 299 acres, of which 60 percent is impervious.

DRAINAGE BASIN 7

This basin is located on the southeastern portion of CMH and drains runoff from hangars, maintenance facilities, the old terminal building, and portions of the original airfield. Drainage piping in Basin 7 conveys flow to the CMH boundary at Outfall 007. The flow ultimately discharges into Mason Run. The total drainage area of Drainage Basin 7 is approximately 38 acres, of which 50 percent is impervious.

DRAINAGE BASIN 8

This basin includes areas on the north side of the Airport that drain into open ditches and storm sewers discharging into Big Walnut Creek through Outfall 008. Portions of the drainage basin, including approximately 2,041 acres and nine percent of the total amount of impervious surfaces in Drainage Basin 8 are not located on CMH property. The total drainage area of Drainage Basin 8 is approximately 2,482 acres, of which 15 percent is impervious.

DRAINAGE BASIN 9

This basin is located in the southwest corner of the Airport, and incorporates the portion of Airport property that drains via overland flow into the City of Columbus stormwater sewer system. The total drainage area of Drainage Basin 9 is approximately 50 acres, of which two percent is impervious.

5.6.1.2 Water Supply

Potable water is supplied to CMH by the Hap Cremean Water Plant, operated by the City of Columbus. Raw water for the three City of Columbus drinking water plants is drawn from surface water from the Scioto River, Big Walnut Creek, and Hoover and Alum Creek reservoirs. Raw water is supplemented by ground water from a south wellfield area in southeastern Franklin County.[4]

A report provided by Environmental Data Resources, Inc. (EDR) identified water wells located on CMH property. Two of these wells are located near the Nationwide hangar and one well is located near Outfall 008. There are also five water wells located south of the CMH property, on the former Air Force Plant 85 property and south of East 5th Avenue. There are nine water wells located north of CMH near Johnstown Road and I-270. These wells are not located within the vicinity of the proposed Airport development (i.e., Runway 10R/28L and proposed passenger terminal).[5]

5.6.1.3 Ground Water Hydrology

CMH lies within the Till Plains of the Central Lowland Physiographic Province. Ground water is present in three major aquifer systems that are present in Franklin County: Devonian limestone aquifers, Mississippian sandstone aquifers, and glacial outwash aquifers.[6] The Airport is located above Devonian limestone and glacial outwash aquifers.

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4 Ohio State University Extension Fact Sheet, 2006, retrieved November 20, 2006, from The Ohio State University. http://ohioline.osu.edu/aex-fact/0480_25.html

5 Environmental Data Resources, Inc. The EDR Radius Map with GeoCheck. Port Columbus International Airport. Columbus, Ohio, 2006.

6 United States Geological Survey. *Results of Soil, Ground-Water, Surface-Water, and Streambed-Sediment Sampling at Air Force Plant 85*, Columbus, Ohio. Columbus, OH: USGS, 1997.

The Ohio Department of Natural Resources, Division of Water Inventory provides data from ground water monitoring stations in Franklin County. Typically, the depth of the ground water table at CMH is 15 to 30 feet. Ground water recharge at the facility occurs from adjacent streams and rivers and from precipitation events. Based on the information identified in the previous surface water and ground water investigations conducted at former Air Force Plant 85, ground water generally flows in a southeasterly direction.[7]

The soils present along CMH's southern boundary belong to the Bennington-Pewamo (generally wet to ponded and poorly permeable soils) and Urban Land-Bennington Complex (poorly permeable soils) Associations. The area between Mason Run and Big Walnut Creek, on the eastern side of CMH, is comprised of soils belonging to the Bennington-Urban Land Complex Association and lies over relatively impermeable shale bedrock. This shale is rarely used for water supply except in limited weathered zones where it serves as an effective confining layer separating the limestone aquifers from the more permeable overlying deposits.[8, 9]

A study at the former Air Force Plant 85 identified isolated water-bearing zones located at the soil-shale interface. The remaining portion of former Air Force Plant 85 is underlain by sand and gravel outwash deposits. The content of clays, sands, and gravels in soil samples varies from area to area at the former Air Force Plant 85 facility.[10]

5.6.1.4 Airport Operations that May Affect Water Quality and Applicable Best Management Practices (BMPs)

The following activities have the potential to generate pollutants that could enter the stormwater drainage system and subsequently affect the water quality of Turkey Run, Mason Run, Alum Creek, and Big Walnut Creek. **Table 5.6-1** provides information regarding airport drainage areas and the current operations within these areas that have the potential to generate stormwater pollutants.

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7 United States Air Force, Air Force Materiel Command, Aeronautical Systems Center, Engineering Directorate, Environmental, Safety and Health Division, Wright-Patterson Air Force Base. *Environmental Baseline Survey Update*. Columbus, OH: 2002

8 Web Soil Survey. 2007. Retrieved 22 August, 2007, from United States Department of Agriculture, Natural Resources Conservation Service. http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

9 United States Geological Survey. *Results of Soil, Ground-Water, Surface-Water, and Streambed - Sediment Sampling at Air Force Plant 85*, Columbus, Ohio. Columbus, OH: USGS, 1997.

10 United States Geological Survey. *Results of Soil, Ground-Water, Surface-Water, and Streambed - Sediment Sampling at Air Force Plant 85*, Columbus, Ohio. Columbus, OH: USGS, 1997.

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Table 5.6-1
AIRPORT DRAINAGE AND OPERATIONS THAT MAY IMPACT WATER QUALITY
Port Columbus International Airport

Receiving Stream	Outfall	Areas Drained	Current Operations	Potential Stormwater Pollutants
Turkey Run	001	Chemical storage areas, former Air Force Plant 85, infield areas, parking lots, rental car facilities, roadways, runway/taxiway pavement	Chemical storage, equipment storage, fuel storage, pavement deicing, vehicle fueling, vehicle maintenance, vehicle washing	Cleaning solutions, pavement deicers, petroleum hydrocarbons, rubber particles, solvents
Mason Run	002	Chemical storage areas, food services, hotels, infield areas, maintenance facilities, parking lots, rental car facilities, roadways, runway/taxiway pavement	Aircraft fueling, building and grounds maintenance, chemical storage, equipment maintenance, equipment storage, floor washdown, fuel storage, pavement deicing, pesticide and herbicide storage/usage, vehicle fueling, vehicle maintenance, vehicle washing	Cleaning solutions, herbicides, pavement deicers, pesticides, petroleum hydrocarbons, rubber particles, solvents
	003	Infield areas, parking lots, roadways, runway/taxiway pavement	Equipment storage	Petroleum hydrocarbons, pavement deicers, rubber particles, solvents
	007	Chemical storage areas, infield areas, maintenance areas, parking lots, roadways, runway/taxiway pavement, tenant hangars	Aircraft deicing/anti-icing, aircraft fueling, aircraft maintenance, chemical handling, chemical storage, equipment maintenance, equipment storage, floor washdown, fuel storage, pavement deicing, vehicle fueling, vehicle maintenance, vehicle washing	Cleaning solutions, glycol, pavement deicers, petroleum hydrocarbons, rubber particles, solvents

Table 5.6-1, *Continued*
AIRPORT DRAINAGE AND OPERATIONS THAT MAY IMPACT WATER QUALITY
Port Columbus International Airport

Receiving Stream	Outfall	Areas Drained	Current Operations	Potential Stormwater Pollutants
Big Walnut Creek	004	Airport Rescue and Fire Fighting, chemical storage areas, food services, infield areas, parking lots, roadways, runway/taxiway pavement, tenant hangars	Chemical storage, equipment storage, fire fighting equipment testing/flushing, floor washdown, fuel storage, pavement deicing, vehicle washing	Aircraft fire fighting foam, cleaning solutions, pavement deicers, petroleum hydrocarbons, rubber particles, solvents
	006	Chemical storage areas, Concourses A, B, and C, food services, fuel farm, grassed areas, hotels, infield areas, maintenance areas, parking lots, roadways, runway/taxiway pavement	Aircraft deicing/anti-icing, aircraft fueling, aircraft maintenance, aircraft lavatory service, aircraft painting/stripping, aircraft washing, building and grounds maintenance, chemical handling, chemical storage, equipment degreasing/washing, equipment fueling, equipment maintenance, equipment storage, floor washdown, fuel storage, outdoor apron washdown, pesticide and herbicide storage/usage, pavement deicing, steam cleaning, vehicle fueling, vehicle maintenance, vehicle painting/stripping, vehicle washing	Cleaning solutions, glycol, herbicides, lavatory waste, paint, pesticides, pavement deicers, petroleum hydrocarbons, rubber particles, solvents
	008	Apron areas, fuel farm, grassed areas, infield areas, maintenance areas, parking lots, roadways, runway/taxiway pavement	Aircraft deicing/anti-icing, aircraft fueling, aircraft maintenance, aircraft lavatory service, aircraft painting/stripping, aircraft washing, building and grounds maintenance, chemical storage, equipment fueling, equipment maintenance, equipment storage, floor washdown, fuel storage, pesticide and herbicide storage/usage, pavement deicing, runway rubber removal, vehicle fueling, vehicle maintenance, vehicle painting/stripping, vehicle washing	Cleaning solutions, glycol, herbicides, lavatory waste, paint, pesticides, pavement deicers, petroleum hydrocarbons, rubber particles, solvents
Alum Creek	N/A	Grassed areas, roadways	Building and grounds maintenance	Herbicides, pesticides

N/A: Stormwater drains into Alum Creek via overland flow.

SEWAGE AND WASTEWATER

Sewage and wastewater generated at CMH are managed by the City of Columbus, Division of Sewerage and Drainage via the Southerly Wastewater Treatment Plant (SWWTP). The SWWTP is located approximately 20 miles southeast of CMH. Sanitary sewage and deicing stormwater collected from the gate areas at CMH are discharged to City of Columbus sanitary sewers. According to the City of Columbus, Division of Sewerage and Drainage, the average hydraulic capacity of this treatment plant is approximately 114 million gallons per day (MGD). The treatment plant currently treats an average of 96 MGD of municipal sewage and industrial/commercial wastewater.

AIRCRAFT DEICING/ANTI-ICING

Aircraft deicing and anti-icing fluids are applied by the airlines and Fixed-Base Operators (FBOs) at terminal gate areas, aprons, and taxiway hold areas following FAA guidelines. The CRAA operates a gate and hold apron collection system during the deicing season (October 1st to April 30th). Collected deicing stormwater runoff is discharged into the sanitary sewer. All stormwater discharged, including the uncollected aircraft deicing stormwater, is discharged from the Airport in accordance with the facility's NPDES stormwater discharge permit through Outfalls 002 and 006. The final NPDES permit limitations for these Outfalls have been designed to ensure compliance with State water quality standards applicable to the use designations of the receiving streams. The CRAA evaluates the impact of aircraft deicing/anti-icing on stormwater discharges via regular discharge sampling and the annual comprehensive site compliance evaluations, in accordance with permit conditions. The stormwater volume and deicer loadings discharged to sanitary sewers, as well as the volume and loadings discharged to surface waters, vary greatly by season due to changes in weather conditions.

Aircraft deicing fluids are currently applied at aircraft gates within Drainage Basins 2 and 6, and have the potential to affect the stormwater discharges from Outfalls 002 and 006. A portion of the deicing fluids applied to aircraft surfaces fall to the ramp where it is mixed with falling or melting precipitation on paved airport surfaces. The deicing stormwater drains into trench drains and catch basins that are part of a stormwater and deicing fluid collection facility at the Airport. Deicing areas, catch basins, and associated infrastructure are identified on Exhibit 5.6-1.

Deicing fluids from the terminal building area are collected through the stormwater drainage system and diverted to a pumping facility. The pumping facility is designed to pump stormwater flows that are less than the peak flow rate from a 10-year recurrence winter storm event to the deicer processing areas.[11] Additionally, snow accumulation from the terminal building and east Remain Overnight (RON) aircraft parking area is plowed and transported to a snowmelt collection area east of the terminal. Melted snow from this area is diverted to the

[11] Camp Dresser and McKee. *Port Columbus International Airport, Glycol Collection System, Operations and Maintenance Manual*. Columbus, Ohio, 2005.

spent deicer pumping facility. A portion of the deicers applied to aircraft drip and shear from the aircraft surfaces during taxi and takeoff. This may occur in Drainage Basins 1, 2, 3, 4, 6, 7, and 8, resulting in discharge to surface waters through Outfalls 001, 002, 004, 006, 007, and 008.

The collected deicing stormwater is monitored for Biochemical Oxygen Demand (BOD)[12] upstream of the spent deicer pumping facility to determine if stormwater can be discharged directly to the surface waters under the terms of the CMH NPDES permit. If the measured BOD concentrations exceed 1,000 milligrams per liter (mg/L), the stormwater is directed to one of two four-million gallon aboveground storage tanks (ASTs) for controlled/monitored release to the sanitary sewer system. Deicing stormwater is released in accordance with the conditions specified in the CRAA's Wastewater Discharge Permit from the City of Columbus into the sanitary sewer system for treatment at the SWWTP.

The primary stormwater pollutants associated with aircraft deicing and anti-icing activities are BOD and propylene glycol. BOD is the amount of oxygen consumed by micro-organisms when decomposing carbonaceous and nitrogenous organic materials and is usually performed in a five-day period (i.e., 5-day BOD or BOD_5). Currently, CMH tenants do not utilize ethylene glycol for deicing operations at the Airport. CMH tenants performing aircraft deicing/anti-icing activities seek to apply the amount of fluid necessary for safe operation of the aircraft while minimizing excess application, in order to reduce the impact on stormwater discharges.

A deicer application, storage, discharge, and treatment simulation tool has been used to estimate the quantities of aircraft deicing fluid, and aircraft anti-icing fluid applied at CMH. The simulation tool was used to evaluate whether the changes from the proposed development could adversely affect water quality. Unique to the characteristics of CMH, airport-specific features that were integrated into the simulation included:

- Stormwater/Deicer Collection Areas;
- Flight Landing and Departure Schedules;
- Deicer Runoff Criteria;
- Snow Management;
- Sanitary Sewer Load Restrictions; and
- Existing CMH Deicer Collection System.

A simulation of deicer and anti-icer applications were conducted to estimate the characteristics at CMH during the 2005-2006 deicing season. Hourly weather data from the local weather station at CMH for 2005-2006 was incorporated to simulate the hourly volumes of aircraft deicer/anti-icer applied, considering the available flight schedule. The total simulated volume of deicer was then compared to the

[12] The collected deicing stormwater is monitored for Total Organic Carbon, which is converted to a BOD value.

total quantity of deicer at CMH for the year, which was obtained from the airlines' deicer reports and other comparable industry information. The airlines' deicer reports are compiled and summarized by the CRAA and maintained in a computer database. Parameters, such as the rates of deicer applied to aircraft under various winter weather conditions, were also reviewed. Flow rates, BOD_5 loads, BOD_5 concentrations, and propylene glycol concentrations were calculated on an hourly basis for the existing conditions using 56 years of weather data, deicing areas, and collection areas.

The performance of the CMH deicer collection system under the 2006 existing conditions was simulated. An annual average of 326,000 gallons of mixed aircraft deicing fluid (ADF) and 13,000 gallons of aircraft anti-icing fluid (AAF) applied were identified through the simulation. The results of the simulation for the existing conditions concluded that 4.7 million gallons of storage is required to contain the 10-year recurrence interval season and 5.8 million gallons for the worst case season (reflecting a 57-year recurrence interval season) on record. The existing storage tanks have eight million gallons of capacity. Therefore, the CMH deicer collection system and ASTs did not overflow in the 56 seasons simulated for the existing conditions.

The existing CMH deicer collection system equalization pump station was sized to handle a 10-year winter design storm. The pump station was designed so that overflows would only occur during events where the receiving streams had high flow rates due to the large storm event and could assimilate discharges from the system above the NPDES permitted limits. Simulating all 56 seasons at 2006 operating conditions indicated that the pump station would have overflowed at least one hour during 5 of the 56 seasons reviewed. Although overflows were seen in the results of the simulation, the occurrence of overflows is permitted if it exceeds a 10-year winter design storm condition.

AIRCRAFT FUELING

Mobile refuelers are currently utilized at CMH as the means to provide fuel to all commercial aircraft. Fueling of the commercial aircraft takes place at the gates while general aviation aircraft are fueled at their respective hangars or tiedowns. Routine and primary aircraft fueling activities have the potential to cause small leaks and spills that may enter the stormwater drainage system for Drainage Basin 2 (Outfall 002), Basin 6 (Outfall 006), Basin 7 (Outfall 007), and Basin 8 (Outfall 008). Minor spills can occur when fuel tanks are overfilled or when disposing of aircraft sump fuel. These minor spills can become entrained in stormwater runoff and transported into the stormwater drainage system.

The likely stormwater pollutants associated with aircraft fueling are petroleum hydrocarbons. CMH tenants performing aircraft fueling are required to follow the aircraft fueling BMPs and applicable Spill Prevention, Control, and Countermeasure (SPCC) plans. CMH tenants performing aircraft fueling, promptly clean up spills and leaks to minimize the impact on stormwater discharges.

AIRCRAFT LAVATORY SERVICE

Lavatory service operations involve connecting a hose from a lavatory cart to an aircraft and emptying lavatory waste into the cart. After lavatory waste is emptied, the aircraft lavatory system is washed and disinfected and the waste is collected in the cart. The lavatory waste and wash water is then disposed of into the sanitary sewer system at the triturator building located east of the existing terminal near the fuel farm (see Exhibit 5.6-1).

Minor spills can occur from leaky carts; from connection and disconnection of the hoses; from transportation and disposal of waste fluids; and from the use of surfactant and disinfectant chemicals. When operations are not correctly performed, pollutants from these minor spills can potentially enter the stormwater drainage system and discharge (primarily through Outfall 006). The likely stormwater pollutants associated with lavatory service operations are lavatory waste (fecal coliform bacteria), chemicals (some of which contribute to BODs and phosphate loading), and wash water. CMH tenants performing aircraft lavatory service promptly clean up spills and leaks to minimize the impact on stormwater discharges.

AIRCRAFT WASHING

Typical contaminants associated with aircraft washing include oil and grease, solvents, petroleum hydrocarbons, sediment (resulting in increased suspended solids), and surfactants (some of which contribute to BODs and phosphates). When the washing activities are performed outdoors, these pollutants must be contained to prevent discharges into the stormwater drainage system. Therefore, the CRAA prohibits tenants from washing in a manner that allows wash water to enter the stormwater drainage system. If wash water were to exit the Lane Aviation, Nationwide, and NetJets buildings, pollutants associated with this activity would primarily be discharged through Outfalls 002 and 004.

FUEL STORAGE

Fuels are stored outdoors in underground storage tanks (USTs), ASTs, and mobile refuelers. Most USTs storing fuel are equipped with leak detection equipment to minimize releases and potential fuel leaks from entering the stormwater drainage system. ASTs storing fuel are required to be located within secondary containment. Mobile refuelers, used for aircraft fueling, include uncovered outdoor fuel storage with secondary containment when in a non-operational or non-standby mode. The CRAA and CMH tenants handling fuel are required to follow the fueling BMPs and applicable SPCC plans. Pollutants from fuel storage areas have the potential to discharge through Outfalls 002, 006, and 008.

PAVEMENT DEICING

The CRAA is responsible for deicing common airfield pavement surfaces (i.e., taxiways, runways, and aprons) using potassium acetate and sodium formate. Tenants at CMH are responsible for pavement deicing in their leasehold areas and are instructed by CRAA not to utilize urea-based deicing materials. Deicing materials have the potential to runoff directly into the CMH storm sewer system, mix with active precipitation, and discharge into the storm sewers or become entrained in snowpiles where they eventually will discharge into the storm sewers during the snowmelt process.

Pavement deicing may occur in Drainage Basins 1, 2, 3, 4, 5, 6, 7, and 8. Pavement deicing stormwater may discharge through Outfalls 001, 002, 003, 004, 006, 007, and 008.

The primary stormwater pollutant of concern associated with pavement deicing activities is BODs. CMH tenants performing pavement deicing activities apply only the minimum amount of deicing material that allows for safe operation of aircraft and to minimize the impact on stormwater discharges.

RUNWAY RUBBER REMOVAL

Runway rubber removal activities reduce the accumulated rubber on runways, thereby increasing traction during aircraft takeoff and touchdown. The CRAA contracts with an outside contractor to perform runway rubber removal at CMH. The likely stormwater pollutants associated with runway rubber removal are caustic chemicals such as potassium hydroxide or sodium hydroxide and/or the rubber residue produced from the removal process. These materials can potentially enter the stormwater drainage system if improperly applied, contained, or removed.

The CRAA requires its contractor to apply these chemicals according to the manufacturers' instructions; safely to contain the chemicals and residue on the pavement; and safely to remove the chemicals, residue, and rinse water to ensure that these products will not enter the stormwater drainage system. Pollutants associated with this activity have the potential to be discharged through Outfalls 001, 002, 003, 004, 006, 007, and 008.

GROUND VEHICLE FUELING

Routine ground vehicle fueling activities have the potential to cause small leaks and spills that could enter the stormwater drainage system if managed improperly. Minor spills can occur when fueling or when fuel tanks are overfilled. These minor spills could become entrained in stormwater runoff, be transported through the stormwater drainage system, and discharged primarily at Outfalls 002, 006, and 008. The likely stormwater pollutants associated with ground vehicle fueling are petroleum hydrocarbons. CMH tenants performing ground vehicle fueling are required to follow vehicle fueling BMPs and applicable SPCC plans. CRAA personnel and CMH tenants performing vehicle fueling promptly clean up spills and leaks to minimize the impact on stormwater discharges. A shut-off valve was installed

within the stormwater catch basin draining the area near the Airfield Maintenance Building ASTs. This valve can be closed to prevent fuel spills in this area from entering the stormwater drainage system. The Airfield Maintenance Building is located along Bridgeway Avenue and is within Drainage Basin 8.

5.6.1.5 History of Water Quality Data Collection at CMH

Water quality studies of surface waters in this region were performed by the Ohio EPA in 1996,[13, 14, 15] and 2000.[16] These studies evaluated fish and macro-invertebrate communities under the biocriteria promulgated by the Ohio EPA both upstream and downstream of CMH. The results of these studies were then used to assess the attainment of standards that have been established for different stream habitat types in the different ecoregions within Ohio. These studies also collected information about the physical properties of the receiving waters such as pH, temperature, and dissolved oxygen. The Ohio EPA also sampled for other pollutants in the receiving waters, such as metals and nutrients, as part of these studies.

In addition to the Ohio EPA water quality studies, significant water quality data has been collected by the CRAA from its NPDES-regulated outfalls, from an internal monitoring station (601) on CMH property that is near the fuel farm, and from monitoring points upstream and downstream of CMH (801 and 901, respectively). Water samples are taken at various frequencies in compliance with the facility's NPDES stormwater discharge permit. The paragraphs below provide a brief synopsis of the water quality data collected since 2004.

A review of the 2004 analytical data indicates that stormwater discharges were in compliance with NPDES permit limits with the exception of the following: Monthly discharge limitation for oil and grease of 15 mg/L and maximum limit of 20 mg/L was exceeded in March (75 mg/L) and December (30.5 mg/L) at the internal monitoring station (Outfall 601). In December, the samples collected at Outfalls 002, 006, 008, and 801 exceeded their holding times for five-day Carbonaceous BOD ($CBOD_5$). Weekly analytical flow data was not available for Outfall 002 in February 2004 and was not valid for Outfall 008 from March to December.

A review of the 2005 analytical data indicates that stormwater discharges were in compliance with NPDES permit limits with the exception of the following: Monthly oil and grease was exceeded in January (45 mg/L), March (68.1 mg/L), and December (43.8 mg/L) from the internal monitoring station (Outfall 601). Samples were not collected at Outfall 002 in August due to channel maintenance. Samples collected at Outfall 006 and 008 exceeded their hold times for the weekly total dissolved solids analysis. Outfall 008 had invalid monthly analytical flow data from January through December. There was no monthly flow data from the internal

[13] Ohio EPA. *Biological and Water Quality Study of the Lower Big Walnut Creek and Walnut Creek Tributaries*. Columbus, OH: Ohio EPA, 1996.
[14] Ohio EPA. *Biological and Water Quality Study of Mason Run*. Columbus, OH: Ohio EPA, 1996.
[15] Ohio EPA. *Biological and Water Quality Study of the Big Walnut Creek Basin*. Columbus, OH: Ohio EPA, 1996.
[16] Ohio EPA. *Biological and Water Quality Study of the Big Walnut Creek Basin*. Columbus, OH: Ohio EPA, 2000.

monitoring station (Outfall 601) from January to August and non-valid analytical flow and benzene, toluene, ethylbenzene, and xylene (BTEX) results for December.

A review of the 2006 analytical data indicates stormwater discharges were in compliance with NPDES limits with the exception of the following: Monthly oil and grease was exceeded in February (44.3 mg/L) and March (26.1 mg/L) from the internal monitoring station (Outfall 601).

REGULATORY HISTORY AND FRAMEWORK

Stormwater is discharged from CMH in accordance with the NPDES stormwater discharge permit that was issued July 15, 2002 and became effective August 1, 2002. The NPDES permit expired on July 31, 2007. CRAA applied for a renewal of its permit in January 2007 and continues to perform operations in accordance with the requirements set forth in the expired permit until a new permit is issued.

The NPDES permit (4II00007*BD) includes interim and final effluent limitations and monitoring requirements for Outfalls 001, 002, 003, 004, 006, 007, 008, an internal monitoring station (601), an upstream monitoring station (801), and a downstream monitoring station (901). The interim limitations were effective from August 1, 2002 to January 15, 2007.

The interim permit requirements had effluent limitations for pH and oil and grease, but only specified monitoring for other parameters at particular Outfalls. The final permit requirements became more stringent when the final effluent limitations for other parameters became effective on January 16, 2007 for discharges from Outfalls 001, 002, 003, 004, 006, 007, and 008. Final permit limitations are presented in **Table 5.6-2**.[17]

The final NPDES permit requires monitoring at Outfalls 001, 003, 004, and 007 only when stormwater is discharged from the facility, while Outfalls 002, 006, 008, 601, 801, and 901 are monitored at particular timeframes established in the permit.

[17] Ohio EPA. National Pollutant Discharge Elimination System Permit No. 4II00007*BD for Columbus Municipal Airport Authority: Ohio EPA, 2002.

Table 5.6-2
FINAL NPDES PERMIT REQUIREMENTS
Port Columbus International Airport

Outfall	Parameter (units)	Discharge Limitation (Maximum)	Discharge Limitation (Minimum)	Monthly Discharge Limitation	Monitoring Frequency
001, 003, 007	Dissolved Oxygen (mg/L)	-	4.0	-	When Discharging
002	Dissolved Oxygen (mg/L)	-	4.0	-	1/Week (Winter); 1/Month (Summer)
006	Dissolved Oxygen (mg/L)	-	5.0	-	1/Week (Winter); 1/Month (Summer)
008	Dissolved Oxygen (mg/L)	-	5.0	-	1/Month (Winter); 1/Month (Summer)
801, 901	Dissolved Oxygen (mg/L)	N/A	N/A	N/A	1/Quarter
001, 003, 004, 007	pH (Standard Units)	9.0	6.5	-	When Discharging
002, 006	pH (Standard Units)	9.0	6.5	-	1/Month (Summer); 1/Week (Winter)
008	pH (Standard Units)	9.0	6.5	-	1/Month (Winter); 1/Month (Summer)
601	pH (Standard Units)	9.0	6.5	-	1/Month
801, 901	pH (Standard Units)	N/A	N/A	N/A	1/Quarter
001, 003, 004, 007	Oil and Grease (mg/L)	20	-	15	When Discharging
002, 006, 008, 601	Oil and Grease (mg/L)	20	-	15	1/Month
001, 003, 007	Nitrogen, Ammonia (mg/L)	3.1	-	1.9	When Discharging (Winter)
001, 003, 007	Nitrogen, Ammonia (mg/L)	5.6	-	2.0	When Discharging (Summer)
002	Nitrogen, Ammonia (mg/L)	3.1	-	1.9	1/Week (Winter)
002	Nitrogen, Ammonia (mg/L)	5.6	-	2.0	1/Week (Summer)

Table 5.6-2, *Continued*
FINAL NPDES PERMIT REQUIREMENTS
Port Columbus International Airport

Outfall	Parameter (units)	Discharge Limitation (Maximum)	Discharge Limitation (Minimum)	Monthly Discharge Limitation	Monitoring Frequency
004	Nitrogen, Ammonia (mg/L)	6.8	-	-	When Discharging (Summer)
004	Nitrogen, Ammonia (mg/L)	6.1	-	-	When Discharging (Winter)
006, 008	Nitrogen, Ammonia (mg/L)	6.8	-	-	1/Month (Summer)
006, 008	Nitrogen, Ammonia (mg/L)	6.1	-	-	1/Month (Winter)
801, 901	Nitrogen, Ammonia (mg/L)	N/A	N/A	N/A	1/Quarter
001, 003, 007	Propylene Glycol (µg/L)	640,000	-	71,000	When Discharging
002	Propylene Glycol (µg/L)	640,000	-	71,000	1/Month
006	Propylene Glycol (µg/L)	1,300,000	-	950,000	1/Month
008	Propylene Glycol (µg/L)	N/A	N/A	N/A	1/Month
001, 003, 007	Ethylene Glycol (µg/L)	1,300,000	-	140,000	When Discharging
002	Ethylene Glycol (µg/L)	1,300,000	-	140,000	1/Month
006	Ethylene Glycol (µg/L)	2,600,000	-	1,874,000	1/Month
008	Ethylene Glycol (µg/L)	N/A	N/A	N/A	1/Month
001, 003, 007	CBOD 5 day (mg/L)	-	-	200	When Discharging
002	CBOD 5 day (mg/L)	-	-	200	1/Week (Winter); 1/Month (Summer)
006	CBOD 5 day (mg/L)	-	-	1,300	1/Week (Winter); 1/Month (Summer)

Table 5.6-2, *Continued*
FINAL NPDES PERMIT REQUIREMENTS
Port Columbus International Airport

Outfall	Parameter (units)	Discharge Limitation (Maximum)	Discharge Limitation (Minimum)	Monthly Discharge Limitation	Monitoring Frequency
008	CBOD 5 day (mg/L)	N/A	N/A	N/A	1/Month
801, 901	CBOD 5 day (mg/L)	N/A	N/A	N/A	1/Quarter
002, 006	Chemical Oxygen Demand (Low Level) (mg/L)	N/A	N/A	N/A	1/Week (Winter); 1/Month (Summer)
008	Chemical Oxygen Demand (Low Level) (mg/L)	N/A	N/A	N/A	1/Month
801, 901	Chemical Oxygen Demand (Low Level) (mg/L)	N/A	N/A	N/A	1/Quarter
002, 006, 008	Total Suspended Solids (mg/L)	N/A	N/A	N/A	1/Month
002, 006, 008	BTEX (µg/L)	N/A	N/A	N/A	1/Quarter
601	BTEX (µg/L)	N/A	N/A	N/A	1/Month
002, 006	Flow Rate (MGD)	N/A	N/A	N/A	1/Month (Summer); 1/Week (Winter)
008, 601	Flow Rate (MGD)	N/A	N/A	N/A	1/Month
002, 006	Dissolved Solids, Sum of (mg/L)	N/A	N/A	N/A	1/Month (Summer); 1/Week (Winter)
008	Dissolved Solids, Sum of (mg/L)	N/A	N/A	N/A	1/Month
801, 901	Dissolved Solids, Sum of (mg/L)	N/A	N/A	N/A	1/Quarter
002, 006, 008	1,2,4-Trimethylbenzene (ug/L)	N/A	N/A	N/A	1/Quarter
801, 901	Water Temperature (°C)	N/A	N/A	N/A	1/Quarter

N/A: No Specified discharge limitation for this parameter.

- : A maximum/minimum discharge limitation has not been specified for this parameter.

The final NPDES permit includes specific discharge limitations for $CBOD_5$ at Outfalls 001, 002, 003, 006, and 007. $CBOD_5$ is the amount of oxygen consumed by micro-organisms when decomposing carbonaceous organic materials (i.e., excludes nitrogenous organic materials) and is usually performed in a 5-day period (i.e., 5-day CBOD or $CBOD_5$). The $CBOD_5$ requirements were developed to address discharges associated with deicing activities that utilize aircraft deicing fluids and the organic components of pavement deicing chemicals. The final permit also includes specific discharge limitations for ethylene glycol and propylene glycol for Outfalls 001, 002, 003, 006, and 007.

As described under *Aircraft Deicing/Anti-icing*, deicing stormwater is primarily discharged through Outfalls 002 and 006. The final permit limitations for these Outfalls have been designed to ensure compliance with State water quality standards applicable to the use designations of the receiving streams.

Use designations are goals that are set for specific surface water bodies in the State of Ohio.[18] River segments of Big Walnut Creek, Mason Run, and Turkey Run flow adjacent to or through the eastern portion of CMH property (via the stormwater drainage system). Stormwater exiting the Airport discharges between river miles 28 to 25 of Big Walnut Creek, which is designated by the Ohio EPA as a Warm Water Habitat for aquatic life.[19] Warm Water Habitat streams are waters that are capable of supporting a balanced, integrated, and adaptive community of warm water aquatic organisms.[20] Stormwater also drains through a series of offsite storm sewers into river segments of Alum Creek on the western portion of CMH property. Stormwater exiting the Airport discharges to Alum Creek at approximately river mile 9, which is also designated by the Ohio EPA as a Warm Water Habitat.[21]

The segments of Mason Run and Turkey Run on Airport property have been designated by the Ohio EPA as Limited Resource Waters, which are those waters that are incapable of supporting even a modified aquatic community due to irreversible effects such as periodically dry stream beds or severe habitat alterations. These Limited Resource Waters are identified as those which have been altered to the extent that no appreciable assemblage of aquatic life can be supported.[22] The Limited Resource Waters near the Airport have been the subject of a use attainability analysis (multi-step scientific assessment of the water's use designation).

The segments of Big Walnut Creek, Mason Run, Turkey Run, and Alum Creek receiving discharges from the Airport are also designated by the Ohio EPA as Agricultural and Industrial Water Supplies. In addition, the segments of Big Walnut Creek, Mason Run, and Alum Creek receiving water from the Airport are designated as Primary Contact Recreation Areas, which include waters that have a depth of at least one meter over an area of 100 feet or where canoeing is a feasible activity.

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18 Ohio EPA. *Biological and Water Quality Study of Mason Run*. Columbus, OH: Ohio EPA, 1996.

19 United States. Ohio EPA. *Biological and Water Quality Study of the Lower Big Walnut Creek and Walnut Creek Tributaries*. Columbus, OH: Ohio EPA, 1996.

20 Ohio EPA. *Understanding Ohio's Surface Water Quality Standards*. Columbus, OH: Ohio EPA, 1995.

21 River Mile System of Ohio. 2007. Retrieved 22 August, 2007, from the Ohio EPA. http://www.epa.state.oh.us/dsw/gis/RiverMileSystem.htm

22 Ohio EPA. *Biological and Water Quality Study of Mason Run*. Columbus, OH: Ohio EPA, 1996.

Turkey Run is a Secondary Contact Recreation Area where the water is less than one meter over an area of 100 feet and where canoeing is not a feasible activity.[23] **Table 5.6-3** identifies the use designations for segments of these streams as identified by the Ohio EPA. It is important to note that use designations vary for different segments of each stream.

[23] Ohio EPA. *Biological and Water Quality Study of Mason Run*. Columbus, OH: Ohio EPA, 1996.

Table 5.6-3
OHIO EPA USE DESIGNATIONS FOR SEGMENTS OF BIG WALNUT CREEK, MASON RUN, TURKEY RUN, AND ALUM CREEK
Port Columbus International Airport

		Aquatic Life Habitat Designation						Water Supply Use Designation			Recreation Use Designation			
Water Body Segment	**CMH Outfalls Discharging into Segment**	**Warmwater Habitat**	**Exceptional Warmwater Habitat**	**Modified Warmwater Habitat**	**Seasonal Salmoid Habitat**	**Coldwater Habitat**	**Limited Resources Water**	**Public Water Supply**	**Agricultural Water Supply**	**Industrial Water Supply**	**Bathing Waters**	**Primary Contact Waters**	**Secondary Contact Waters**	**State Resource Waters**
Big Walnut Creek- Williams Road (River Mile 15.8 to mouth)			X	X					X	X		X		
Hoover Reservoir			X					X	X	X		X		
At River Mile 32.64		X						X	X	X		X		
At River Mile 51.4		X						X	X	X		X		
Headwaters to Hoover Reservoir		X							X	X		X		
Airport Tributary (River Mile 28 to 25)	**004 006 008**	X							X	X		X		
Mason Run- headwaters to Fifth Ave. (River Mile 6.1)	**002 003 007**						X		X	X		X		
Fifth Ave to I-70 (River Mile 1.9)				X					X	X		X		
I-70 to mouth		X							X	X		X		
Turkey Run- headwaters to River Mile 1.6	**001**						X		X	X			X	
River Mile 1.6 to mouth				X					X	X			X	
Alum Creek-at River Miles 26.74 and 21.20		X						X	X	X		X		
All other segments		X							X	X		X		

X= Use designation identified in Ohio Administrative Code 3745-1-09 (Finalized 01/23/08) for specified water body segments in the Scioto River Drainage Basin.

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The CRAA has developed and implemented a Stormwater Pollution Prevention Plan (SWPPP) for Airport industrial activities, as required by the CMH NPDES permit. The SWPPP includes descriptions of BMPs that the Airport and its tenants incorporate into regular activities to minimize the potential for contamination of stormwater discharges. Similarly, CRAA has developed and implemented a SPCC program to address the control and containment of unanticipated spills of petroleum products at the facility. Airport tenants are required to prepare and implement their own SPCC plans.

In addition to the CRAA's NPDES permit, the City of Columbus, Department of Public Utilities issued a Wastewater Discharge Permit No. 010154-1 to CRAA for discharges of spent deicing fluid and deicing stormwater to the sanitary sewer system. The Wastewater Discharge Permit became effective on March 29, 2004 and expires on March 29, 2009. An applicable renewal application will be submitted to the City of Columbus 90 days before the expiration date of the permit. The Wastewater Discharge Permit includes self-monitoring and reporting requirements for daily flow, daily average $CBOD_5$, Total Kjeldahl Nitrogen (TKN), and pH. The self-monitoring station is located downstream of the deicing fluid effluent control vault. The self-monitoring requirements are presented in **Table 5.6-4**. CRAA is required to comply with the City of Columbus Sewer Use and Regulations and pursuant to the Director's Regulations in the Columbus City Codes Chapter 1145. CRAA is also required to comply with the standards, specifications, and guidance of FAA Advisory Circular (AC) 150/5300-14B, *Design of Aircraft Deicing Facilities*.

Table 5.6-4
WASTEWATER DISCHARGE PERMIT
Port Columbus International Airport

Parameter (units)	Daily Discharge Limitation (Maximum)	Monthly Average Discharge Limitation
Daily Flow (MGD)	1,000,000	N.S.
Daily Average	N.S.	N.S.
BOD_5[1] (lbs/day)	15,000	6,000
pH (Standard Units)	N.S.	N.S.
TKN (lbs/day)	3,000	2,000

N.S. Not Specified

[1] To protect against operational problems at the SWWTP, discharge series must be ramped up at a rate not to exceed 3,000 lbs/day. A discharge series shall be defined as subsequent discharges that occur each day after an initial discharge to SWWTP, and include the initial discharge. Any discharge that occurs after a day without a discharge shall constitute a new series. The first day of a discharge series may not exceed 3,000 lbs/day. No discharge shall exceed the previous day's BOD_5 discharge by 3,000 lbs/day.

Concurrent with the National Environmental Policy Act (NEPA) process and independent of the NPDES permit, the CRAA may have to pursue State and Federal authorization for construction projects pursuant to the requirements of the Clean Water Act (CWA). A Water Quality Certification under Section 401 of the CWA is required from the Ohio EPA to obtain a permit under the CWA 404 from the U.S. Army Corps of Engineers (USACOE). In order for the Ohio EPA to issue a Section 401 Water Quality Certification, the project must comply with Ohio's Water Quality Standards, defined in Ohio Administrative Code (OAC) Chapter 3745-1. If the proposed actions result in increased loadings to streams, the Ohio Anti-Degradation Rule (OAC 3745-1-05) will be triggered, requiring an anti-degradation review.

For construction and development-related activities, the CRAA and CMH tenants must meet requirements imposed by both the Ohio EPA and the City of Columbus. The Ohio EPA requires that a Notice of Intent be submitted and a construction SWPPP prepared for any construction activities that disturb more than one acre of land at the airport. The SWPPP must incorporate water quality-based construction stormwater management requirements, as described in the Ohio General Stormwater NPDES Permit for Discharges Associated with Construction Activity.

The City of Columbus Division of Sewerage and Drainage (DOSD) Manual was released in March 2006 and describes the construction design criteria and permit requirements developers must meet for management of stormwater in order to obtain approval of the development by DOSD. The DOSD Manual added water quality control requirements and provided design criteria for specific BMPs (i.e., detention and infiltration).

The FAA has also developed construction requirements for airport drainage systems and detention basin design. The FAA AC 150/5320-5C, *Surface Drainage Design*, provides guidelines for effective airport drainage and stresses the importance of considering stormwater impacts on critical airport operations when selecting appropriate controls. FAA AC 150/5200-33B, *Hazardous Wildlife Attractants on or Near Airports*, provides criteria for minimizing open water surfaces to reduce the attraction of large waterfowl, which can pose a safety risk to aircraft. Additionally, FAA AC 150/5200-33B identifies recommended detention requirements and criteria (e.g., 10,000-foot separation distance from runway, drawdown timing, etc.).

Additionally, if a proposed Federal action will impound, divert, drain, control, or otherwise modify the waters of any stream or other body of water, the Fish and Wildlife Coordination Act (16 U.S.C. §§ 661-667e) applies, unless the project is for the impoundment of water covering an area of less than 10 acres. The FAA is consulting with the United States Fish and Wildlife Service and the Ohio Department of Natural Resources to identify means to prevent loss or damage to wildlife resources resulting from the proposal (see Appendix K, *Biological Resources*).

The 2008 Stormwater Management Master Plan (2008 SWMMP) was created for the CRAA to provide guidance on the phased implementation of stormwater BMP controls associated with the long-term development plans for the Airport. Regulatory criteria, including requirements from the City of Columbus DOSD Manual, FAA AC 150/5320-5C, FAA AC 150/5200-33B, and NPDES Permit conditions were used to identify and assess applicable modifications to the stormwater system as required for new development.

The development of the 2008 SWMMP was facilitated by development and use of a Stormwater Management Model (SWMM) to characterize existing stormwater discharges and evaluate BMP options for multiple phases of future development. The 2008 SWMMP assessed the existing stormwater runoff and analyzed existing under capacity and flooding issues at CMH.

A pipe capacity assessment was performed as part of the SWMMP analysis to identify key points in the CMH drainage system where flooding has the potential to occur. Flooding elevations were monitored at infield areas, parking lots, and other locations that offered on-site detention under existing conditions. The Airport drainage system was also analyzed for areas where drainage is inefficient or flooding is a problem. The most significant finding of the SWMM analysis was the limited capacity of a 30-inch storm sewer that drains a portion of Basin 1. This analysis was repeated with a 100-year storm to identify detention and flooding elevations under more extreme conditions. This analysis indicated that there are several locations in the existing drainage system where flooding is likely to occur under 100-year storm conditions (i.e., Basin 7; Basins 4, 6, and 8; Taxiway B and West End of Runway 10R/28L).

5.6.2 FUTURE CONDITIONS: 2012[24]

This section presents the potential impacts from the Sponsor's Proposed Project and its alternatives to the existing water quantity and quality at CMH and surrounding properties.

Alternative A:
2012 No Action

The 2012 Alternative A does not include Airport development activities identified by the Sponsor's Proposed Project evaluated in this EIS. However, the CRAA is planning non-EIS related development between 2006 and 2012 that includes a crossover taxiway, parking lots, and roadway improvements. The following section provides a discussion and details the potential water quantity and quality impacts that are expected to occur from these actions. The proposed actions identified in this section were evaluated and cleared under independent NEPA evaluations and have independent utility from the projects being evaluated in this EIS.

[24] Information obtained from the 2007 Stormwater Management Master Plan for the Port Columbus International Airport, unless otherwise noted.

WATER QUANTITY IMPACTS

The 2008 SWMMP was used to assess the existing under capacity and flooding issues at the Airport. The under capacity issues identified under the existing conditions SWWM model are expected to coincide with Alternative A. The most significant finding of the SWMM analysis was the limited capacity of a 30-inch storm sewer that drains a portion of Basin 1. Also, there are several locations in the existing drainage system where flooding is likely to occur under 100-year storm conditions (i.e., Basins 4, 6, 7, and 8; Taxiway B and West End of Runway 10R/28L).

Basin 1

Development in Basin 1 includes the parking lots on the north side of 17th Avenue, the west lane of the Crossover Taxiway, the first phase of the International Gateway Loop, and the Stelzer Road interchange. This development is expected to disturb approximately 122 acres of land. As a result, the runoff volume is expected to increase by 7.6 percent for the 1-year storm when compared to pre-development conditions. The volume of runoff is expected to increase by 5.5 percent for the 100-year storm when compared to pre-development conditions.

Basins 2 and 3

Development that will occur within Basin 2 will be associated with the International Gateway Loop project, which will disturb approximately 59.6 acres of land in Basin 2. No new development will occur within Basin 3. The runoff volume is expected to increase by 0.7 percent for the 1-year storm when compared to pre-development conditions. The volume of runoff is also expected to increase by 0.4 percent for the 100-year storm when compared to pre-development conditions.

Basin 4

Development occurring within Basin 4 is the rehabilitation of the East Apron in the southeast corner of the airfield. This project will involve the removal and replacement of existing pavement and is not expected to affect the overall percent of imperviousness within Basin 4. Therefore, no increase in runoff is expected in this area.

Basin 6

Developments occurring within Basin 6 are the placement of a 1,300-foot structural wall on the south side of Taxiway E and a portion of the International Gateway Loop project. The structural wall is not expected to significantly impact the drainage pattern or percent of imperviousness for Basin 6. The International Gateway Loop project overlies the existing location of International Gateway. Therefore, this development is also not expected to increase the percent of imperviousness within Basin 6 and no increase in runoff is expected in this area.

Basin 7

Development occurring within Basin 7 is the rehabilitation of the East Apron in the southeast corner of the airfield. This project will involve the removal and replacement of existing pavement, and is not expected to affect the overall percent of imperviousness within Basin 7 and no increase in runoff is expected.

Basin 8

Development that will take place within Basin 8 is a new perimeter road north of the Runway 10L/28R. It is not anticipated the road will have a significant impact on the drainage pattern or percent of imperviousness and no increase in runoff is expected in this area.

WATER QUALITY IMPACTS

Increased runoff in Drainage Basins may lead to increased suspended and dissolved solid loads from lack of infiltration into pervious areas. Also, projected increases in flights and passenger levels are expected to occur in 2012. The increase in flights will require fueling and aircraft maintenance operations to increase commensurately. Specific Airport operations, such as aircraft deicing/anti-icing, and pavement deicing have also been determined to cause potential water quality impacts. However, if the requirements of both the NPDES permit and the City of Columbus, Department of Public Utilities Wastewater Discharge Permit are met and stormwater BMPs are implemented, the existing water quality at CMH is not expected to be impacted. A description of the potential water quality impacts from increased deicing operations is presented below.

Flow rates, BOD_5 loads, BOD_5 concentrations, and propylene glycol concentrations were calculated on an hourly basis for each alternative using 56 years of weather data, forecasted operations, deicing areas, and collection areas. The collection, storage, and discharge processes in the existing system were simulated to determine potential impacts from the implementation of each alternative.

The performance of the existing CMH deicer collection system, including an additional collection area of 7.16 acres that is currently being constructed under the 2012 conditions was simulated. An annual average of 468,000 gallons of mixed ADF and 17,000 gallons of AAF applied were identified to be used for deicing. The results of the simulations concluded the existing CMH deicer collection system ASTs had the potential to overflow in 3 of the 56 seasons or have a 5.3 percent chance of overflowing in any given year.

The existing CMH deicer collection system equalization pump station potentially overflowed at least one hour during 10 of the 56 seasons simulated. The simulated volume of potential overflows increased 201 percent from the existing conditions. Additional overflows in 2012 compared to existing conditions could negatively affect water quality.

The simulated results also indicated an increase of 44 percent of ADF and 31 percent of AAF from the existing conditions would occur due to the increase in operations. Subsequently, the increase in deicer dripped or tracked into uncollected areas would also occur. These increases of uncollected deicer could cause violations of the ethylene glycol, propylene glycol, dissolved oxygen, and BOD_5 NPDES permit limits at the Outfalls. Therefore, additional collected area or revised application conditions need to be established by the Airport.

RECOMMENDED IMPROVEMENTS

Independent development projects are currently under development in Basins 1 - 3 and are expected to be complete by 2009, including a crossover taxiway, parking lots, and roadway improvements. These non-EIS-related projects were evaluated and cleared under independent NEPA evaluations and have independent utility from the projects being evaluated in this EIS. Infrastructure improvements were recommended as necessary based on conveyance size to meet the 5 and 10-year storms, which also meet the requirements of the DOSD Manual. The following provides the recommended stormwater management improvements associated with development under 2012 Alternative A conditions.

Basin 1

The independent projects described above for Basins 1 - 3 are already constructed or are currently under development. The development of these projects included local stormwater management controls in accordance with DOSD and Ohio EPA construction and post-construction stormwater management requirements. Local stormwater improvements constructed for these developments include a pump station, collection system, and detention basin for the Crossover Taxiway and International Gateway projects, and a local detention basin for the parking lots north of 17th Avenue. A local detention basin was constructed for the parking lots north of 17th Avenue in the northeast corner of the parking lot, which required the forfeiture of approximately 540 potential parking spaces.

It is recommended that all drainage in Basin 1 be routed through the existing box culvert underneath Runway 10R/28L. Under the 2012 Alternative A conditions, the existing runway box culvert does not have sufficient capacity to convey runoff from the appropriate design storm (10-year) and 1-year storm without surcharging. While the box culvert will surcharge under relative low-intensity storm events, the culvert does have the capacity to convey the drainage from all of the development that is anticipated in 2012 Alternative A to a regional detention basin at Aircenter Drive without significantly increasing the existing flooding occurring in the open channels at the Airport. A detention basin size of 6.41 acre-feet was determined to meet regulatory requirements for all developments in Basin 1. It would be necessary to install a new storm sewer (a 54-inch diameter or equivalent pipe is recommended) to convey unrestricted drainage from the parking lots to the box culvert under Runway 10R/28L, and ultimately to a regional detention basin.

Basins 2 and 3

The independent project described above for Basin 2 and 3, the International Gateway project, is currently under development. The development of this project included local stormwater management controls in accordance with DOSD and Ohio EPA construction and post-construction stormwater management requirements. Local stormwater improvements constructed included a pump station, collection system, and detention basin.

Deicing Collection System

The simulation of the existing deicer collection system identified potential storage and overflow issues. The recommended improvements to the system include incorporating 1.4-million gallons of additional AST storage and 100,000-gallons of equalization storage to prevent overflows. Additionally, the collection areas or revised application conditions need to be established by the Airport to prevent potential NPDES violations.

Alternative C2a:
2012 Relocate Runway 10R/28L 800 feet to the South – Noise Abatement Scenario A

The relocation of Runway 10R/28L 800 feet to the south of its existing location was analyzed to determine potential impacts to water quantity and quality.

WATER QUANTITY IMPACTS

The development projects for Alternative C2a will primarily require modifications of stormwater management in Basins 1, 2, 3, 4, and 6. Runway 10R/28L currently drains into several large conveyance box culverts that carry tributary flows to Turkey Run (Outfall 001), Mason Run (Outfalls 002 and 003), and Big Walnut Creek (Outfalls 004 and 006). The relocation of Runway 10R/28L would require a relocated runway collection system and would also impact flow routing from upstream areas of CMH. A more detailed description of the area disturbed from this action that will affect water quantity and quality is described below:

Basin 1

The proposed development in Basin 1 includes the relocation of Runway 10R/28L and associated taxiways. The development is expected to disturb approximately 157 acres more than 2012 Alternative A conditions. As a result of this development, the percent imperviousness of Basin 1 would increase, while the total area tributary to Outfall 001 would decrease due to a shift in drainage basin boundaries. This would result in an increase in the runoff volume by 2.3 percent for the 1-year storm when compared to 2012 Alternative A conditions. The volume of runoff is expected to decrease by 0.5 percent for the 100-year storm when compared to 2012 Alternative A conditions.

Basins 2 and 3

The proposed development in Basins 2 and 3 includes the relocation of Runway 10R/28L and associated taxiways and is expected to disturb approximately 107 acres more than 2012 Alternative A conditions. The construction of the runway and taxiways would cause an increase in impervious surfaces in Basin 2, but a decrease in impervious surfaces in Basin 3. The decrease in impervious surfaces in Basin 3 is due to the removal of parking lot areas which would be replaced with infield areas. This would result in an overall decrease in the runoff volume by 1.3 percent for the 1-year storm when compared to 2012 Alternative A conditions. The volume of runoff is also expected to decrease by 1.2 percent for the 100-year storm when compared to 2012 Alternative A conditions.

Basin 4

The 2012 Alternative C2a development projects in Basin 4 include the relocation of Runway 10R/28L and associated taxiways, as well as the expansion of the ravine downstream of Outfall 004 into a stormwater detention basin. The development would disturb approximately 143 acres and runoff volume would increase by 0.4 percent for the 1-year storm when compared to the 2012 Alternative A. The volume of runoff would decrease by 0.5 percent for the 100-year storm when compared to 2012 Alternative A.

The proposed detention basin within the ravine downstream of Outfall 004 was sized to address ultimate stormwater management requirements for Basin 4, associated with the Airport's long-term development plan. Under the proposed development project, the existing ravine, which has an approximate storage capacity of 9.1 acre-feet, will be expanded to provide 29.2 acre-feet of detention capacity in order to meet DOSD flow restriction and water quality volume requirements. This represents an increase in the ravine capacity by 20.1 acre-feet or 220 percent. The proposed basin development would also include the installation of outlet restrictions on the existing 42-inch discharge pipe to meet flow restriction requirements.

Basin 6

The proposed development in Basin 6 is the development of the northernmost taxiway associated with the relocated runway. The location of the proposed taxiway within Basin 6 overlays the current location of Runway 10R/28L; however, existing pavement may be replaced or resurfaced. The proposed development area is already paved under the existing conditions; therefore, the project is not expected to affect the overall percent of imperviousness and water quantity of Basin 6.

WATER QUALITY IMPACTS

The implementation of this alternative has the same runoff impacts and aircraft deicer application impacts as the 2012 Alternative A. Pavement deicer application is not expected to increase with the relocation of Runway 10R/28L, although it would be applied in different areas. The same deicer collection and management techniques employed at the Airport today would be used for the relocated runway.

MITIGATION COMMITMENTS

The following provides the stormwater management mitigation commitments associated with development under the 2012 Alternative C2a. A summary of recommended mitigation techniques for each Basin is presented in **Table 5.6-5**.

Basin 1

The relocation of Runway 10R/28L would require changes or enhancements to the storm sewer infrastructure discussed under the 2012 Alternative A. The 48-inch diameter storm sewer (discussed in 2012 Alternative A) will need to be connected to a new 10-foot by 6-foot runway box culvert running from the south end of the existing Red Lot to the existing 12-foot by 5-foot culvert under Aircenter Drive. This box culvert replaces the existing box culvert described in the 2012 Alternative A.

In addition, the detention basin at Aircenter Drive would need to be constructed with a total capacity of 107.5 acre-feet (65.67 for Basin 1) to meet the regulatory requirements for management of water quantity and quality associated with the development.

Basins 2 and 3

Development in Basins 2 and 3 would require restrictions on discharges to Mason Run according to the City of Columbus DOSD Manual. Flow restriction orifices would be placed within a drainage structure downstream of the drainage confluence for Basins 2 and 3. This restriction would meet the limits described within the DOSD Manual for discharges to Mason Run for the critical storm and 100-year storm. All excess stormwater that cannot be discharged to Mason Run would be diverted through a gravity sewer to the detention basin at Aircenter Drive (42 acre-feet for Basin 2 and 3). Flows up to 140 cubic feet per second (cfs) could be diverted to the detention basin at Aircenter Drive, which meets the regulatory requirements for management of water quantity and quality associated with the development.

Basin 4

The U.S Army Corps of Engineers (USACOE) has approved the jurisdictional wetland and stream delineation completed for the Detailed Study Area for this EIS.[25] The determination identified the ravine at Outfall 004 as a jurisdictional stream (Stream 2). Therefore, development of the detention basin, including installation of an outlet restriction, would be subject to Section 404 of the Clean Water Act (CWA). A Water Quality Certification under Section 401 of the CWA would be required from the Ohio EPA to obtain a permit under the CWA 404 from the USACOE. The project would have to comply with Ohio's Water Quality Standards, defined in OAC Chapter 3745-1. Additionally, if it is determined that the runway development would result in increased loadings to the stream, the Ohio Anti-Degradation Rule (OAC 3745-1-05) would be triggered, requiring an anti-degradation review.

REGULATORY COMMITMENTS

In addition to the water quantity and quality mitigation measures described above, all construction activities will be regulated under the Ohio EPA. A Notice of Intent must be submitted and a construction SWPPP prepared for the development activities. The development must also coincide with the City of Columbus DOSD Manual design criteria and permit requirements for management of stormwater. Because the developments at the Airport will modify areas greater than 10 acres and are associated with waters of Big Walnut Creek, Mason Run, and/or Turkey Run, the regulations of the Fish and Wildlife Coordination Act will apply. The FAA is consulting with the Ohio EPA, Ohio Department of Natural Resources, U.S. EPA, U.S. Fish and Wildlife Service, and Natural Resources Conservation Service regarding potential additional analyses from the developments (see Appendix K).

Alternative C2b: 2012 Relocate Runway 10R/28L 800 Feet to the South – Noise Abatement Scenario B

Alternative C2b includes the same relocation of Runway 10R/28L 800 feet to the south as Alternative C2a, along with implementation of the operational recommendations of the 2007 Part 150 Study. The implementation of the operational recommendations of the 2007 Part 150 Study would not alter the areas potentially impacted and therefore would not change the potential impacts described above for Alternative C2a.

[25] See Appendix K, *Biological Resources*, for a copy of the report and letter from the USACOE.

Table 5.6-5
SUMMARY OF WATER QUANTITY INFRASTRUCTURE MITIGATION COMMITMENTS
Port Columbus International Airport

Drainage Basin	Time Period	Infrastructure	Detention Location	Detention Basin Capacity (ac-ft)
Basins 1, 2 & 3	2012	Replace existing box culvert with new 10-ft x 6-ft box culvert as part of relocated runway drainage system 17th Avenue Parking Lots: 48-in Pipe (1,300 ft) Diversion from Basins 2 and 3 to Turkey Run: 4,125 ft of 7-ft x 5-ft Box Culvert, Diversion Structure Basin Outlet Structure	Aircenter Drive Site Basin	107.50
Basins 1, 2 & 3	2018	Replace existing box culvert with new 13-ft x 6-ft box culvert as part of relocated runway drainage system; 17th Avenue Parking Lots: Two 54-in Pipes (1,300 ft); Diversion from Basins 2 and 3 to Turkey Run: 4,125 ft of 7-ft x 5-ft Box Culvert, Diversion Structure; Diversion to Big Walnut Creek: 3,200 ft of 8-ft x 5-ft box culvert; 2,750 ft of 10-ft x 6-ft box culvert; 1,790 ft of 13-ft x 6-ft box culvert Basin Outlet Structure	Aircenter Drive Site Basin	103.25

Notes: The recommended mitigation requirements presented in this table assume the Aircenter Drive detention basin maximum capacity is approximately 115 ac-ft.

These recommendations have not been finalized by the CRAA.

Alternative C3a:
2012 Relocate Runway 10R/28L 702 Feet to the South – Noise Abatement Scenario A

The relocation of Runway 10R/28L 702 feet south of the existing location was analyzed to determine potential impacts to water quantity and quality. 2012 Alternative C3a would result in an area of imperviousness that would be slightly less, but essentially the same as 2012 Alternative C2a. Therefore, 2012 Alternative C3a would include the same potential impacts to water quantity and quality as described for 2012 Alternative C2a. The mitigation commitments discussed for 2012 Alternative C2a would be the same for 2012 Alternative C3a.

Alternative C3b:
2012 Relocate Runway 10R/28L 702 Feet to the South – Noise Abatement Scenario B (Sponsor's Proposed Project)

Alternative C3b includes the relocation of Runway 10R/28L 702 feet to the south along with implementation of the operational recommendations of the 2007 Part 150 Study. The implementation of the operational recommendations of the 2007 Part 150 Study would not alter the areas potentially impacted. Therefore, Alternative C3b would include the same potential impacts to water quantity and quality as specified in Alternative C2a with the exception that slightly less impervious surface would be constructed. The water quantity and quality affected from the difference in impervious surface from Alternative C3b is not expected to be significantly different from Alternative C2a. The mitigation commitments discussed for 2012 Alternative C2a would be the same for 2012 Alternative C3b.

5.6.3 FUTURE CONDITIONS: 2018

This section presents potential water quantity and quality impacts from the Sponsor's Proposed Project and its alternatives for 2018 conditions.

Alternative A:
2018 No Action

The 2018 Alternative A does not include Airport development activities being evaluated in this EIS. However, the CRAA is planning on non-EIS related development between 2012 and 2019 that includes new and relocated parking lots. The following section provides a discussion of the potential water quantity and quality impacts that are expected to occur from these non-EIS actions. Additionally, increased operations at the Airport would result in potential increases in water quality impacts. The non-EIS projects and increased operations would occur in all of the development alternatives.

WATER QUANTITY IMPACTS

The non-EIS development projects for 2018 Alternative A will require modifications of stormwater management in Basin 1. The new developments will require new stormwater collection systems, as well as water quality controls to address increased and relocated vehicle activity. A more detailed description of the area disturbed from this action that will affect water quantity and quality is described below:

Basin 1

Anticipated development in Basin 1 includes expansion of the 17th Avenue parking lot, southern expansion of the Red Lot, and construction of a new Green Lot. These non-EIS development projects will disturb approximately 53 acres. The runoff volume in Basin 1 is expected to increase by 2.5 percent for the 1 year storm and by 0.8 percent for the 100-year storm due to the non-EIS projects.

WATER QUALITY IMPACTS

Alternative 2018 would include increased runoff impacts due to an increase in impervious surfaces. Increased operations are expected to occur by the year 2018 independent of the proposed development described in this EIS. Therefore, Airport operations that may affect water quality are also expected to increase, such as aircraft deicing/anti-icing, pavement deicing, and fueling. Under the 2018 Alternative A, the collection area for the deicing activities will be the same as the existing conditions.

The performance of the existing CMH deicer collection system under the 2018 conditions was simulated. An annual average of 533,000 gallons of mixed ADF and 20,000 gallons of AAF applied were identified to be used for deicing. The results of the simulations concluded that existing CMH deicer collection system ASTs had the potential to overflow in 5 of the 56 seasons or have a 8.9 percent chance of overflowing in any given year. An additional 2.4-million gallons of storage would be needed to prevent overflows in all 56 seasons.

The existing CMH deicer collection system equalization pump station potentially overflowed at least one hour during 10 of the 56 seasons simulated. The simulated volume of potential overflows increased 196 percent from existing conditions. Additional overflows in 2018 compared to existing conditions could negatively affect the water quality. An additional 100,000 gallons of equalization storage would be required to reduce overflows to the volumes of the existing conditions.

The simulated results also indicated that an increase of 63 percent of ADF and 54 percent of AAF from the existing conditions would occur due to the increase in operations. Subsequently, the increase in deicer dripped or tracked into uncollected areas would also occur. These increases of uncollected deicer could cause violations of the ethylene glycol, propylene glycol, dissolved oxygen, and BOD_5 NPDES permit limits at the Outfalls. Therefore, additional collected area or revised application conditions need to be established by the Airport.

RECOMMENDED IMPROVEMENTS

The following provides stormwater management mitigation recommendations associated with the non-EIS development projects that would occur under the 2018 Alternative A.

Basin 1

Improvements within Basin 1 include two 54-inch pipes to route flow from the expanded 17th Avenue parking lot to the South Runway box culvert, provided that regional detention is required for the 17th Avenue parking lots. If one 54-inch pipe is installed by 2012 to address the full build-out of the parking lots north of 17th Avenue, one additional 54-inch pipe would need to be installed to address this expansion south of 17th Avenue. The box culvert under the runway may need to be increased in size to pass the 10 year runoff without surcharging. This will ensure the runway culvert has the necessary capacity for runoff to reach the proposed regional detention basin and allow flow to be routed to meet regulatory requirements. The regional detention basin will also need to be expanded to provide detention for these new developments, in order to meet DOSD water quantity and quality requirements.

Deicing Collection System

The simulation of the existing deicer collection system identified potential storage and overflow issues. The recommended improvements to the system include incorporating 2.4-million gallons of additional AST storage and 100,000-gallons of equalization storage to prevent overflows. Additionally, the collection areas or revised application conditions need to be established by the Airport to prevent potential NPDES violations.

Alternative C2a:
2018 Relocate Runway 10R/28L 800 Feet to the South and Construct Midfield Terminal (T2) – Noise Abatement Scenario A

The 2018 Alternative C2a, which includes the proposed passenger terminal, was analyzed to determine potential impacts to water quantity and quality. The following provides a discussion of the potential water quantity and quality impacts from the proposed terminal and assumes the construction of the relocated runway as described in 2012 Alternative C2a is complete and in use.

WATER QUANTITY IMPACTS

In addition to the modifications to the Basins described under 2012 Alternative C2a and the non-EIS development discussed under 2018 Alternative A, the proposed passenger terminal included in 2018 Alternative C2a will require further modifications of stormwater management in Basins 2, 3, and 4. A more detailed description of the area disturbed from this action that will affect water quantity and quality is described below:

Basins 2 and 3

Proposed developments that are expected to impact Basins 2 and 3 include the first phase of terminal construction, including the initial construction of the terminal and new parking facilities. The proposed development projects will disturb approximately 79.46 acres. As a result, runoff volume is expected to decrease by 19.3 percent for the 1-year storm. The volume of runoff is also expected to decrease by 19.5 percent for the 100 year storm when compared to 2012 Alternative C2a conditions.

Basin 4

None of the 2018 development projects will occur within Basin 4; however, the recommended stormwater management in Basins 2 and 3 involves the diversion of additional flows from Basin 2 to Basin 4. With the additional flow, stormwater controls will be required at Outfall 004 to restrict peak discharges. The runoff volume in Basin 4 is expected to increase by 23.1 percent for the 1-year storm when compared to 2012 Alternative C2a. The volume of runoff is also expected to increase by 22.4 percent for the 100-year storm when compared to 2012 Alternative C2a conditions.

The development of a detention basin in Basin 4, described under 2012 Alternative C2a), would meet the detention requirements for 2018 Alternative C2a. It would not be necessary to expand the detention basin beyond what is described under 2012 Alternative C2a; however, it would be necessary to modify the basin outlet structure to ensure that 2018 flow restriction requirements are met.

WATER QUALITY IMPACTS

The implementation of this alternative has the same runoff and aircraft deicer application impacts as described for 2018 Alternative A. However, although aircraft application will remain the same as 2018 Alternative A, an additional 31.25 acres will be added to the collection area for the deicing activities.

The results of the simulations for 2018 Alternative C2a concluded that the existing CMH deicer collection system ASTs had the potential to overflow in 22 of the 56 seasons or have a 39.3 percent chance of overflowing in any given year. An additional six million gallons of storage would be needed to prevent overflows in all 56 seasons.

The existing CMH deicer collection system equalization pump station potentially overflowed at least one hour during 26 of the 56 seasons simulated. The simulated total overflow volume for all seasons when overflows occurred increased from 363,000 gallons for existing conditions to over 6,749,000 gallons for Alternative C2a. The additional area collected at the new terminal will require additional capacity at the pump station to collect the 10-year winter design storm. Additional overflows in 2018 compared to existing conditions could negatively affect

the water quality. In order to prevent overflows it is expected that a new glycol collection system will be added for the new terminal area. In order to contain overflows similar to the existing conditions it is expected that a new equalization pump station would also need to be added. Additional pump capacity on the order of 12,000 gallons per minute and an additional 450,000 gallons of equalization storage would be required to reduce overflows to the volumes of the existing conditions.

Pavement deicer application is not expected to increase significantly with this alternative, although it would be applied in different areas. The same deicer collection and management techniques employed at the Airport today would be used for this condition.

MITIGATION COMMITMENTS

The following provides the stormwater management mitigation commitments associated with development under 2018 Alternative C2a. A summary of recommended mitigation techniques is presented in Table 5.6-5.

Basins 2 and 3

Developments in Basins 2 and 3 include the diversion of flows to the proposed Aircenter Drive detention basin described in 2012 Alternative C2a. As described in the 2012 Alternative C2a, developments in Basins 1, 2, and 3 will exhaust the detention capacity at Aircenter Drive for the 100-year design storm. At lesser storms, the entire basin capacity will not be used.

Rerouting stormwater drainage from the proposed terminal area in Basin 2 to Outfall 004 (Big Walnut Creek) via a dedicated box culvert reduces the tributary area draining to Mason Run. This would create capacity within the detention basin for discharges occurring under this development. The detention basin capacity needed would be 103.25 acre-feet. An 8-foot by 5-foot box culvert would convey stormwater runoff from a minimum of 61.9 acres surrounding the proposed terminal to Big Walnut Creek at Outfall 004. Drainage that is rerouted to Big Walnut Creek would be subject to flow restrictions at Outfall 004 based on the Basin 4 development through 2018. The detention associated with this rerouted flow is described for Basin 4 in this section.

This development would require a variance from DOSD to allow diversion of stormwater from Mason Run to Big Walnut Creek. Also, discharging terminal area drainage to Big Walnut Creek would decrease the likelihood of non-compliance with existing BOD and glycol effluent limits for Outfall 002. Furthermore, this mitigation will help provide the maximum amount of control over Airport discharges to Mason Run and Turkey Run.

Basin 4

The mitigation for Basin 4 includes those also described under 2012 Alternative C2a. A Water Quality Certification under Section 401 of the CWA would be required from the Ohio EPA to obtain a permit under the CWA 404 from the USACOE. The project would have to comply with Ohio's Water Quality Standards, defined in OAC Chapter 3745-1. Additionally, if it is determined the runway development would result in increased loadings to the stream, the Ohio Anti-Degradation Rule (OAC 3745-1-05) would be triggered, requiring an anti-degradation review.

Deicing Collection System

The simulation of the existing deicer collection system identified potential storage and overflow issues. The recommended improvements to the system include incorporating 6.0-million gallons of additional AST storage. The additional area collected at the proposed terminal would require additional capacity at the pump station to collect the 10-year winter design storm. In order to prevent overflows it is expected that a new glycol collection system will be added for the new terminal area. In order to contain overflows similar to the existing conditions it is expected that a new equalization pump station would need to be added. Pump capacity with an additional 12,000 gallons per minute and 450,000 gallons of equalization storage would be required to reduce overflows to the volumes of the existing conditions.

Alternative C2b:
2018 Relocate Runway 10R/28L 800 Feet to the South and Construct Midfield Terminal (T2) – Noise Abatement Scenario B

Alternative C2b assumes the proposed passenger terminal is complete and in use as described in Alternative C2a. This alternative also includes the implementation of the operational recommendations of the 2007 Part 150 Study. The impacts and mitigation discussed for Alternative C2a related to the terminal would be the same for Alternative C2b. The implementation of the operational recommendations of the 2007 Part 150 Study would not alter the areas potentially impacted. Therefore, the impacts and mitigation for Alternative C2b would not change from those described for Alternative C2a.

Alternative C3a:
2018 Relocate Runway 10R/28L 702 Feet to the South and Construct Midfield Terminal (T2) – Noise Abatement Scenario A

The 2018 Alternative C3a includes the same proposed passenger terminal as 2018 Alternative C2a. Therefore, the impacts and mitigation commitments described under 2018 Alternative C2a would remain the same for 2018 Alternative C3a.

Alternative C3b:
2018 Relocate Runway 10R/28L 702 feet to the South and Construct Midfield Terminal (T2) – Noise Abatement Scenario B (Sponsor's Proposed Project)

Alternative C3b assumes the proposed passenger terminal is complete and in use as described in Alternative C2a. This alternative also includes the implementation of the operational recommendations of the 2007 Part 150 Study. The impacts and mitigation discussed for Alternative C2a related to the terminal would be the same for Alternative C3b. The implementation of the operational recommendations of the 2007 Part 150 Study would not alter the areas potentially impacted. Therefore, the impacts and mitigation for Alternative C3b would not change from those described for Alternative C2a.