5.6 WATER QUALITY

5.6.1 Background

Water provides an essential ingredient for many ecosystems. The chemical, physical and biological characteristics of water determine its particular quality. The *Federal Water Pollution Control Act,* as amended by the *Clean Water Act*, provides the authority to establish water quality standards, control discharges into surface and subsurface water, develop waste treatment management plans, and issue permits for discharges and for dredged or fill material. This section of the EIS describes potential water quality impacts from the proposed expansion of the Gary/Chicago International Airport.

5.6.2 Methodology

Pursuant to CEQ 1502.16, this Environmental Impact Statement (EIS) discloses specific impacts to various environmental resource categories, including Water Quality, as defined in FAA Order 5050.4a, Paragraphs 47 and 85. To assess potential water quality impacts from the proposed expansion of the Gary/Chicago International Airport, available literature and data was reviewed, applicable regulatory agencies were consulted and site visits were conducted.

Because the Proposed Action is to occur within the Indiana Lake Michigan Coastal Program (LMCP) area, the applicable summary matrix of laws and guidance documents for this environmental category has been reviewed to confirm that all state and local regulations have been considered in this EIS. The matrix on Water Quality issues can be found in **Appendix C** for reference. Matrix 5-3 Cross-reference of Water Quality Laws and Guidance Documents has been reviewed by the consulting team to confirm that all the identified items have been considered in the evaluation of the water quality impacts as described in this section.

5.6.3 Existing Conditions – 2000

This section describes existing water quality conditions and airport operations that can affect water quality. Stormwater runoff has the potential to be impacted by airport operations such as aircraft/vehicle maintenance, fueling, washing and seasonal aircraft deicing activities. In addition, storm water runoff from runway/taxiway pavement may also contain residuals from the buildup of tire rubber, oil, grease, fuel components, and pavement deicers.

5.6.3.1 Surface Water Resources

The main surface water resource in the study area is the east branch of the Grand Calumet River. The Grand Calumet drains into Lake Michigan through the Indiana Harbor Ship Canal (refer to **Exhibit 5.6-1**). Lake Michigan is the second largest fresh-water body in North America and

Source: Base Map USGS Whiting Quadrangle, and Highland Quadrangle 7.5 Minute Series(Topographic)

North

Not to Scale

Gary/Chicago International Airport
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EXHIBIT 5.6-1
USGS Topograhic Map

April 8, 2004

provides nearly all of the water supply for Gary. The lake offers deep water docking facilities and recreational opportunities. Buffington Harbor, located in Gary northwest of the airport, provides access to world markets for bulk cargos. Several drainage ditches convey storm water runoff from the airport to the east branch of the Grand Calumet. In addition to these surface water resources, several wet swales and ponds are located within the Asphalt Wetland area northwest of Runway 12-30. Surface water resources in the study area are described below.

Grand Calumet River

The Grand Calumet River is about 16 miles long and has a basin area of approximately 62 square miles. The river originates in eastern Gary and continues westward through the heavily industrialized cities of Gary, East Chicago and Hammond, terminating at the Illinois border (and the city limits of Chicago). The natural course of the Grand Calumet River has been substantially altered over the past 150 years in order to accommodate industrial development in the area. In the early 19th century, the Grand Calumet was a sluggish river that drained into Lake Michigan at both its western and eastern ends. In the 1870s the Federal government built a harbor at the Illinois mouth of the river, which allowed water to flow westward more easily. As a result, there was a decrease in stormwater discharge to the river, an increase in vegetation, and an increase in accumulated sand at the eastern mouth of the river. Around 1872, the eastern mouth closed and receded into a lagoon at what is now Marquette Park in Gary, reversing the direction of the river and making it flow westward. The Indiana Harbor Ship Canal, which runs north from the middle of the river to Lake Michigan, was built in 1901. The canal divides the east and west branches of the Grand Calumet River. The majority of the flow in the approximately 10-mile long east branch of the Grand Calumet drains into Lake Michigan through this canal[1].

During periods of extremely high water levels in Lake Michigan, water from the lake flows southward through the Indiana Harbor Ship Canal. Then, along with flow from the east branch of the Grand Calumet River, the flow continues westward through the west branch of the Grand Calumet River to the Little Calumet River in Illinois. This occurrence generally is rare and only has been observed during eight months of the last 85 years, most recently in 1986[2].

Approximately 90% of the river's flow originates as municipal and industrial effluent, cooling and process water, and storm water overflows[3]. This water is discharged at a generally constant rate. The east branch ranges in depth from 3 to 4 feet in the upstream reaches and about 8 to 10 feet at

[1] U.S. Environmental Protection Agency. 2001. *Great Lakes Areas of Concern: Grand Calumet Area of Concern*. Internet Web Site. <http://www.epa.gov/glnpo/aoc/grandcal.html>.

[2] U.S. Geological Survey. 2002b. *Surface-Water and Ground-Water Hydrology and Contaminant Detections in Ground Water for a Natural Resource Damage Assessment of the Indiana Harbor Canal and Nearshore Lake Michigan Watersheds, Northwestern Indiana*. Prepared for the USFWS, Region 3.

[3] U.S. Environmental Protection Agency. 2001. *Great Lakes Areas of Concern: Grand Calumet Area of Concern*. Internet Web Site. <http://www.epa.gov/glnpo/aoc/grandcal.html>.

its confluence with the Indiana Harbor Ship Canal, and has an average velocity of approximately 1 foot per second[4]. U.S. Geological Survey (USGS) gauging station number 04092677 at Industrial Highway, located within the study area, documented a mean annual discharge of 484 cubic feet per second from 1995 to 1999.

Areas of heavy industrial use dominate the study area, and the Grand Calumet River has a long history of industrial pollution. Two industrial sites located within the study area, MIDCO II and Conservation Chemical Company, have extensive contamination and are undergoing clean-up efforts (Refer to **Exhibit 4-19** for the location of these facilities). Contamination of surface and ground water by these and other industrial activities has degraded the quality of the Grand Calumet River.

Currently the U.S. EPA lists the Grand Calumet River as an Area of Concern (AOC). AOCs are severely degraded geographic areas within the Great Lakes Basin. The U.S.-Canada Great Lakes Water Quality Agreement defines them as follows: "Geographic areas that fail to meet the general or specific objectives of the agreement where such failure has caused or is likely to cause impairment of beneficial use of the area's ability to support aquatic life." Problems in the AOC include contamination from polychlorinated biphenyls (PCBs); polynuclear aromatic hydrocarbons (PAHs); and heavy metals, such as mercury, cadmium, chromium and lead. Additional problems include high fecal coliform bacteria levels, biochemical oxygen demand (BOD), suspended solids, and oil and grease. These contaminants originate from both point and non-point sources, including contaminated sediments, leaking underground storage tanks and atmospheric deposition.

A Stage 1 remedial action plan (RAP) for improving water quality in the river was produced in 1991. RAPs identify specific problems in severely degraded Great Lakes AOCs and describe methods for correcting them. The Stage 2 RAP was completed in 1997. A Stage 2.5 RAP is under revision. Stage 2.5 extends the Stage 2 ecosystem approach and reviews how each regulatory, voluntary and enforcement action in the AOC helps restore beneficial uses.

The U.S. Fish and Wildlife Service (USFWS) and the State of Indiana are conducting a Natural Resources Damage Assessment (NRDA) of the river[5,6]. The USFWS is the lead agency for the NRDA. The purpose of the NRDA is to address natural resource injuries resulting from the release

[4] U.S. Geological Survey. 2002b. *Surface-Water and Ground-Water Hydrology and Contaminant Detections in Ground Water for a Natural Resource Damage Assessment of the Indiana Harbor Canal and Nearshore Lake Michigan Watersheds, Northwestern Indiana*. Prepared for the USFWS, Region 3.

[5] Department of Interior, State of Indiana. *Assessment Plan for the Natural Resource Damage Assessment of the Grand Calumet River, Indiana Harbor Ship Canal, Indiana Harbor, and Associated Lake Michigan Environments.* October 1997.

[6] Department of Interior, State of Indiana. Addendum #1 Assessment Plan for the Natural Resource Damage Assessment of the Grand Calumet River, Indiana Harbor Ship Canal, Indiana Harbor, and Associated Lake Michigan Environments. September 1998.

of hazardous substances and oil to the waters and habitat associated with the Grand Calumet River, the Indiana Harbor Ship Canal, Indiana Harbor, and Lake Michigan. The assessment plan serves as the guiding document for all damage assessment activities.

The 2002 303(d) List of Impaired Waterbodies includes the Grand Calumet River, Indiana Ship Harbor Canal and Lake Michigan. Section 303(d) of the Clean Water Act requires states to identify waters that do not or are not expected to meet applicable water quality standards with Federal technology-based standards alone. Parameters of concern for the Grand Calumet River include PCBs, mercury, cyanide, lead, oil and grease, pesticides, copper, and impaired biotic communities. The parameters of concern for the Indiana Harbor Ship Canal are PCBs and mercury, dissolved oxygen, oil and grease, pesticides, and impaired biotic communities. Lake Michigan also has parameters of concern, mainly PCBs and mercury and E. coli. All three of the impaired waterbodies are ranked as high on the severity ranking.

Because of industrial discharges of PCBs, heavy metals and organic compounds in the east branch, the United States Steel Corporation is remediating the sediments in 5 miles of the river from the Norfolk Southern Gary Branch rail bridge located just outside and east of the study area (approximately 3,000 feet east of Industrial Highway) to Tennessee Street (near the Gary Harbor)[7,8,9]. The sediment remediation project is divided into four distinct elements: construction and operation of a 36-acre Corrective Action Management Unit (CAMU); hydraulic dredging of more than 750,000 cubic yards of sediment from the five-mile stretch of river, including conveyance and placement of the sediment into the CAMU; design, construction and operation of a project-specific water treatment plant and a chemically assisted clarifier to treat the water generated by the dredging activities; and return of the treated water to the Grand Calumet River through an existing U.S. Steel National Pollutant Discharge Elimination System permitted outfall.

Airport Drainage Features

Storm water runoff from approximately 26 acres of asphalt aprons, runways and taxiways at Gary/Chicago International Airport flow, via gravity, through a series of earthen ditches and piped channels to the Grand Calumet River. Stormwater sampling has been conducted at six locations as described below and depicted on **Exhibit 5.6-2**.

Sampling Location 1 is located in the river, just west of Industrial Highway. This location receives drainage from the southeastern portion of the airport property. The triangular drainage area, essentially bounded by Industrial Highway, the Grand Calumet River and the eastern

[7] U.S. Department of Justice. 1998. Internet Web Site. <http://www.usdoj.gov/opa/pr/1998/August/358enr.html>
[8] Grand Calumet Task Force. 2003. Internet Web Site www.grandcal.org/river.htm.
[9] U.S. Steel Gary Works, 2003. Internet Web Site.
<http://www.usx.com/corp/rcra/grand_calument_river_remediaton_index.htm>.

Source: Base Map, Gary/Chicago International Airport, 1999; Stormwater Sampling Data, Butler Fairman Consulting Engineers, Stormwater Risk Assessment Inventory Map, 2000.

LEGEND

- Study Area Boundary
- △ Stormwater Sampling Locations

North

Not to Scale

Gary/Chicago International Airport
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EXHIBIT 5.6-2
Stormwater Sampling Locations

April 8, 2004

terminus of Runway 12-30, is undeveloped except for a small road that leads to the FAA Navigational Aids Building.

Sampling Location 2 is located in the Grand Calumet River at the terminus of an underground storm sewer that receives runoff from the southern portion of Runway 12-30, hangars, outside storage areas, the Gary Jet Center Building, and fuel and airport de-icing truck parking areas.

Sampling Locations 3 and 4 are located at the northern tip of a small open drainage ditch that flows approximately 900 feet south and discharges to the Grand Calumet River. An underground storm sewer discharges to this ditch.

Sampling Location 5 is located at the junction of a small open drainage ditch and the Grand Calumet River, approximately 1300 feet west of the ditch in which Sampling Locations 3 and 4 were located. Both of these ditches (and all three sampling locations) receive drainage from almost the entire area east of Runway 2-20 and south of Runway 12-30, including undeveloped land, the air traffic control tower, and some access roads. Runoff from the central portion of Runway 12-30 as well as the terminal building flow through the storm sewer that discharges in the vicinity of Sampling Location 3.

Sampling Location 6 is located in an open drainage ditch southwest of Runway 2-20 near its intersection with the Grand Calumet River. This ditch receives drainage from the western portion of the airport property, including Runway 2-20, the western portion of Runway 12-30, the fuel storage area, airport maintenance building and hangar, and the former Nike missile silos and barracks.

The Gary/Chicago International Airport has applied to the U.S. Army Corps of Engineers to install new storm pipes into the three ditches associated with Sampling Locations 2, 3/4 and 6. The pipes would be backfilled with dredged material and allowed to return to a vegetated state. The purpose of the project is to eliminate the maintenance dredging that is currently required in the ditches. This project is independent of the runway extension and associated elements described in this EIS.

The National Pollution Discharge Elimination System (NPDES) stormwater regulations enacted in 1990 govern the quality of stormwater discharge into waters of the United States. The NPDES rules specify permitting requirements for both construction and operation activities. The State of Indiana has been delegated authority from the U.S. EPA for implementation of stormwater regulations pursuant to the Clean Water Act. A NPDES general permit for airport operations is required under Rule 6 of IDEM's stormwater program for areas where vehicle maintenance, repair

and fueling operations are performed, as well as aircraft deicing areas. NPDES Permit Number INR006051 has been issued to the Gary/Chicago International Airport.

In accordance with this permit, a stormwater pollution prevention plan (SWPPP) was developed for the airport in 1996 and updated in 2000. The permit and the SWPPP require initial sampling of stormwater outfalls. This sampling was conducted in 1993, 1996 and 2000 (refer to **Exhibit 5.6-3** for recent sampling results). Subsequent to the sampling, the permit requires semi-annual visual monitoring of stormwater outfalls, which must be submitted in an annual report to IDEM. Therefore, visual inspections are conducted at two storm events each year. The visual inspection records the presence of turbidity, color, foam, solids, floatables, and oil sheen. Brief reports of the results of the inspections are submitted annually to the permits section of IDEM.

Other Drainage Features

Two pipes have been identified in the area northwest of the existing primary Runway 12-30. One of these pipes is located along Cline Avenue and the other is located in the Asphalt Wetland. The pipes appear to be stormwater drainage features.

Additional Surface Water Resources

Several degraded ponds and swales are located immediately northwest of Runway 12-30 in an area referred to as the Asphalt Wetlands. This large area, located between Runway 12-30 and Cline Ave (**see Exhibit 4-16)**, is fringed with current and former light industrial sites. Much of the Asphalt Wetlands area, including the waterbodies, has been extensively degraded by sand mining, the disposal of construction debris and oil refinery waste, and a chemical recycling operation. The wetland delineation performed in 2002 describes most of the northern two thirds of the Asphalt Wetlands as remnant dune and swale habitat that has been altered through the mining of sand and the disposal of oil refinery waste. The southern third of the Asphalt Wetlands contains an oil tank bottom disposal area and disturbed woodland and prairie area (see Section 5.11 Wetlands and Streams for more detailed information on this area).

EXHIBIT 5.6-3
Gary/Chicago International Airport
Storm Water Discharge Monitoring Results

Parameter		Oil & Grease	Biological Oxygen Demand ($CBOD_5$)	Chemical Oxygen Demand (COD)	Total Suspended Solids (TSS)	Total Kjeldahl Nitrogen (TKN)	Total Phosphorus	pH	Nitrate plus Nitrite Nitrogen	Lead, Icapes	Fecal Coliform	Ethylene Glycol, GC/FID	Propylene Glycol, GC/FID
Unit		mg/l	mg/l	mg/l	Mg/l	mg/l	mg/l	s.u.	mg/l	mg/l	cnt./100ml	mg/l	mg/l
Sample Type		Grab	grab & composite	grab & composite	grab & composite	grab & composite	grab & composite	grab	grab & composite	grab & composite	grab	grab & composite	grab & composite
Limit		10	1	10	1	5	0.5		0.1	0.04	1	25	25
Location	Date												
1	7/17/96	BQL	5.1 & 6.8	12.8 & 31.8	2 & 22	BQL & BQL	BQL & BQL	7.88	.54 & .57	BQL & BQL	NT	NT	NT
2	9/8/96	BQL	6.8 & 3	20.8 % BQL	24 & 24	BQL & BQL	BQL & BQL	7.87	.476 & .922	BQL & BQL	NT	NT	NT
3	9/8/96	BQL	2.5 & 4	BQL & BQL	8 & 15	BQL & BQL	BQL & BQL	7.86	.546 & .871	BQL & BQL	BQL	NT	NT
	3/19/00	BQL	<3 & 5.6	39.3 & 55	135 & 184	2.73 & 2.51	BQL & BQL	7.53	.458 & 1.09	BQL & BQL	NT	ND & ND	ND & ND
4	9/8/96	BQL	29.5 & 23.3	41 & 60.6	56 & 95	BQL & BQL	BQL & BQL	7.29	BQL & .116	BQL & BQL	NT	NT	NT
	4/7/00	BQL	3.5 & 6.4	35.8 & 31.3	50 & 39	1.68 & 1.56	.13 & .12	7.54	.518 & .567	BQL & BQL	NT	NT	NT
5	9/8/96					No Flow Detected							
6A	7/17/96	BQL	6.2 & 5.5	48.3 & 51.7	6 & 13	BQL & BQL	BQL & BQL	7.51	.4 & .25	BQL & BQL	NT	NT	NT
	3/19/00	BQL	<3 & <3	40.6 & 32.6	15 & 4	16.1 & 15	BQL & BQL	7.69	.198 & .193	BQL & BQL	NT	NT	NT

Legend:

BQL - Below Test Quantitation Limit (TQL) NT - Not Tested ND - None Detected

mg/l - milligrams per liter s.u. - single unit cnt./100ml - count per 100 milliliters

Source: Baker Environmental Inc., 2000

5.6.3.2 Water Supply

Lake Michigan is the second largest fresh-water body in North America and provides nearly all of the water supply for Gary. Major exceptions to this include industrial water obtained from deep wells set in bedrock and some private wells used for lawn watering. The Gary/Chicago International Airport relies on municipal water taken from Lake Michigan and distributed by the Indiana American Water Company.

5.6.3.3 Groundwater Hydrology

Three principal aquifers are present in the study area: the unconsolidated (surficial) aquifer, the shallow bedrock aquifer, and the deep bedrock aquifer. Each aquifer differs in depth, development potential and water quality, and there is little direct hydraulic connection between them. The unconsolidated system and the shallow bedrock system provide about 97 percent of the groundwater supply for northwestern Indiana[10].

The unconsolidated aquifer, named the Calumet Aquifer, extends south from Lake Michigan. The Calumet Aquifer is an unconfined aquifer, ranging in thickness from 0 to 100 feet, with an approximate thickness of 40 feet within the study area[11]. The sand comprising the aquifer is exposed at the surface throughout the study area. Substantial areas of the uppermost parts of the Calumet Aquifer are human-made or modified land composed of fill deposits. Beneath the aquifer is nearly impermeable clay till averaging about 75 feet in thickness. Recharge to the Calumet Aquifer is limited to surface infiltration. The Calumet Aquifer supplies the base flow for the Grand Calumet River and discharges to other surface water bodies, including Lake Michigan. An east-west trending groundwater divide is located between the east branch of the Grand Calumet River and Lake Michigan – groundwater generally flows northward from this divide to Lake Michigan, and southward to the east branch of the Grand Calumet River (Refer to **Exhibit 5-6-4**).

[10] U.S. Geological Survey. 2002b. *Surface-Water and Ground-Water Hydrology and Contaminant Detections in Ground Water for a Natural Resource Damage Assessment of the Indiana Harbor Canal and Nearshore Lake Michigan Watersheds, Northwestern Indiana*. Prepared for the USFWS, Region 3.

[11] U.S. Geological Survey. 2002b. *Surface-Water and Ground-Water Hydrology and Contaminant Detections in Ground Water for a Natural Resource Damage Assessment of the Indiana Harbor Canal and Nearshore Lake Michigan Watersheds, Northwestern Indiana*. Prepared for the USFWS, Region 3.

Source: The Louis Berger Group

LEGEND
Study Area
Approximate Location of Groundwate Divide

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EXHIBIT 5.6-4
Approximate Location of Groundwater Divide

April 8, 2004

The shallow bedrock aquifer is composed of limestone, dolomite and shale. Solution features, joints and fractures within these rock formations are filled with water. Depth ranges from approximately 90 to 150 feet in the study area[12]. The deep bedrock aquifer is comprised of three sandstone units at depths exceeding 1,400 feet below the surface. Primary recharge for this aquifer is believed to occur in an outcrop area of northern Illinois and southern Wisconsin. Very little vertical recharge takes place due to the nearly impermeable shales that cap the sandstones.

Groundwater Quality

The shallow water table and presence of permeable sands associated with the Calumet Aquifer create a distinct hazard for contamination from past industrial practices, landfills and waste disposal facilities. The USGS compiled detections of contaminants of concern in the study area and surrounding properties.[13] One-hundred-eleven of the 146 contaminants of concern, including polychlorinated biphenyls; oil-related organic compounds; and trace metals such as arsenic, lead and mercury, were detected in more than 9,400 water samples collected between 1954 and 1998 from areas where groundwater commonly discharges to the Grand Calumet River, the Indiana Harbor Ship Canal, or Lake Michigan.

Groundwater sampling was conducted on the airport property in 1993 as part of a master planning process. The sampling was part of a two-phase Environmental Site Assessment (ESA). The Phase I ESA included a review of environmental records, analysis of available data, and a site visit. The Phase I ESA identified the former Nike silo and barracks sites as the most appropriate areas to test soils and groundwater. As part of the Phase II ESA, two water samples were collected from the underground structure on the Nike silo site and three groundwater samples were collected from the barracks site. The analyses of these samples identified certain metals at levels consistent with background metals concentrations observed on several adjacent parcels.

Lead, however, was detected in the standing water from the Nike silo site at a level requiring further action[14]. Subsequent to the ESA, the U.S. Army Corps of Engineers completed a remedial investigation of the former Nike silo and barracks in 1998. Soil, surface water and groundwater samples were collected and analyzed for a comprehensive list of inorganic and organic

[12] U.S. Geological Survey. 2002b. *Surface-Water and Ground-Water Hydrology and Contaminant Detections in Ground Water for a Natural Resource Damage Assessment of the Indiana Harbor Canal and Nearshore Lake Michigan Watersheds, Northwestern Indiana*. Prepared for the USFWS, Region 3.

[13] U.S. Geological Survey. 2002b. *Surface-Water and Ground-Water Hydrology and Contaminant Detections in Ground Water for a Natural Resource Damage Assessment of the Indiana Harbor Canal and Nearshore Lake Michigan Watersheds, Northwestern Indiana*. Prepared for the USFWS, Region 3.

[14] Gary/Chicago Airport Authority, prepared by R. W. Armstrong & Associates. *Phase I Airport Master Plan Gary Regional Airport*. 1994.

constituents. Since no elevated constituents were identified in the Silo water or groundwater samples, the Corps concluded that no further action was required to remediate the water.[15]

Groundwater Protection

Protection and management of groundwater resources is a responsibility shared primarily by Indiana Department of Natural Resources (IDNR), IDEM, and Indiana State Department of Health (ISDH). Cooperation among the agencies is facilitated through the Interagency Groundwater Task Force that was established in 1986 to develop a state groundwater quality protection and management strategy. The strategy includes action to study, correct and prevent groundwater contamination.

5.6.3.4 Airport Operations that Affect Water Quality

Sewage and Wastewater - Sewage and wastewater generated by the airport is treated by the Gary Sanitary District. This facility is located approximately 0.5 mile southeast of the airport. However, the Airport Traffic Control Tower (ATCT) currently uses a septic tank because a sanitary sewer line does not extend to the ATCT area[16].

Stormwater - The Gary/Chicago International Airport completed an update to its storm water pollution prevention plan[17] in 2000. The plan identified potential pollutant sources that may affect the quality of stormwater discharge. Pertinent pollutant sources and pollution prevention features are as follows.

- Fueling operations. A single fueling and bulk storage facility is located along the north airport property line. Secondary containment is provided around the tanks. The facility is built on a concrete pad that slopes into a catch basin system equipped with a 1000-gallon oil-water separator. Effluent from the separator is gravity fed into a storm water sewer system that discharges into a series of storm water channels that ultimately discharge to the Grand Calumet River at Sampling Location 6 (refer **to Exhibit 5.6-2**).
- Airport Maintenance Building. Storage and minor repairs of airport equipment and vehicles occur inside the building. The interior drains are connected to the public sanitary sewer system.
- Gary Jet Center Building. This center stores drums of lubricating oil and glycol. No secondary containment is provided.

[15] U.S. Army Corps of Engineers, Louisville District. 1999. *Remedial Investigation/Feasibility Study of the Nike C-45 Site, Gary Regional Airport.* June 1999.

[16] Indiana Army National Guard. Environmental Assessment for the Proposed Homeland Defense Mission Improvements at the Gary-Chicago Regional Airport. August 2003.

[17] Butler, Fariman & Seufert. *Stormwater Pollution Prevention Plan 2000 Update*, 2000.

- Deicing and Anti-icing Operation. Both pavement and aircraft deicing and anti-icing operations occur on the airport during winter months. Aircraft deicing/anti-icing is restricted to a special apron in the terminal area, with a collection system that directs the runoff and meltdown to the public wastewater treatment plant. During heavy stormwater runoff situations, when no deicing /anti-icing activities are occurring, the runoff is redirected to the stormwater system by opening a valve in the lift station.
- Herbicide and Pesticide Applications. Herbicides and pesticides are applied throughout the airport at intervals and amounts in accordance with acceptable industry standards. No broadcast applications are conducted
- Aircraft washing. All washings are normally conducted inside, with runoff going directly to the public sanitary sewer line.

U.S. EPA regulations 40 CFR Part 112 establish procedures, methods and equipment to prevent the discharge of oil to Waters of the State. As a regulated facility, the Gary/Chicago International Airport implemented a Spill Prevention Control and Countermeasures (SPCC) program to comply with these regulations. The SPCC plan for the airport outlines procedures for responding to any spillage that could be damaging to the environment.

5.6.4 Future Conditions -- 2007

5.6.4.1 No Action

In general, because no construction would result, water quality would not be affected if the No Action Alternative is selected for implementation. While an increase in aircraft operations over time would result in increased deicing activities, water quality would not be affected because deicing runoff and meltdown are collected and treated. The proposed alternative would, however, involve construction to remediate a contaminated site located northwest of Runway 12-30 that ultimately discharges to the Grand Calumet River. If the No Action alternative is selected, it is unlikely that airport remediation of the groundwater will occur.

5.6.4.2 Improvements to Existing Runway 12-30 to Conform to FAA Standards

Major elements of this alternative affecting water quality include acquisition/development of land northwest of the airport, relocation of the EJ&E railroad tracks, relocation of the airside perimeter roadway (including southwest access), burial of the transmission power line along Cline Ave, extension of Runway 12 by 546 feet and relocation of its threshold, relocating Runway 12-30 navigational aids, improvement of the runway safety area, extension of Taxiway A by 546 feet, and acquisition of land southeast of the airport. The pipeline associated with the Midco II site cleanup that transits the area off the end of the existing runway may need to be encased and possibly lowered to allow for the extension of the runway as required to conform to FAA standards.

Water quality would be affected by construction of these elements and through continued airport operations that influence water quality. Development-related water quality impacts would result from increased impervious surface and increased stormwater volume. Temporary water quality impacts would likely occur during construction, but these would be controlled using erosion and sedimentation controls. Water quality impacts are detailed in the following subsections.

Grand Calumet River and Stormwater Drainage – The proposed project does not involve any work within the Grand Calumet River. The impervious area of the airport is expected to increase by approximately 13 acres under this alternative, but because the soils in the study area are sandy and will allow percolation, stormwater runoff is not expected to increase significantly. Since minimal flow increases are anticipated, no detention will be provided and the size of the existing discharge pipes or ditches would not be altered. Therefore, the existing culverts would serve to restrict flows to the river. Best Management Practices and engineering controls will be implemented to mitigate anticipated erosion and sedimentation impacts throughout construction, as well as post-construction during the operation of the proposed improvements. Measures may include the use of silt fencing, sediment berms, interceptor ditches, hay bales, riprap dams, sedimentation basins, and other erosion and sediment control structures.

Aircraft/Vehicle Maintenance and Fueling Operations - These facilities, and others where petroleum-based products are in use, would continue to minimize the potential for petroleum product discharge into storm water. The airport would continue to use oil/water separators in all fueling areas as a Best Management Practice (BMP). The airport-wide SPCC and SWPPP would be updated to include the new facilities and appropriate activities.

Deicing and Anti-Icing Activities –The increase in runway and taxiway pavement is likely to increase pavement deicing and anti-icing activities. The airport would use acetates and formates as their primary pavement deicer, using urea only in emergency situations. Aircraft deicing/anti-icing runoff would continue to be directed to the public wastewater treatment plant. Thus, the application of deicing chemicals should not impact water quality. The airport-wide SPCC and SWPPP would be updated to include the new facilities and appropriate activities.

Swales and Ponds - Most of the construction activities would occur northwest of Runway 12-30 in the contaminated Asphalt Wetland. The degraded swales and ponds within the construction area would be eliminated by the proposed activities.

Groundwater Remediation – As discussed in Section 5.19.6 (Hazardous Materials Mitigation), the construction activities in the contaminated Asphalt Wetland would remediate contaminated groundwater and soil to reduce or eliminate the risk of groundwater contaminants (primarily metals

and organic compounds) and to prevent further migration of contaminated groundwater.[18] The remediation would reduce or eliminate the discharge of contaminated groundwater to the Grand Calumet River. The remaining thick black tank bottoms and abandoned drums would be removed and disposed in an environmentally sensitive manner. Surficial soils would be removed and replaced with clean fill. The proposed placement of a slurry wall upgradient of the contaminated zone and installation of extraction wells at the southern boundary of the property (near Gary Avenue) to pump and treat the groundwater should prevent migration of contaminated groundwater. Treated groundwater would be re-injected and/or combined with treated groundwater at the ongoing groundwater remediation efforts at the Conservation Chemical Site and the MIDCO II site.

5.6.4.3 Improvements to Provide Additional Runway Length on Runway 12-30

This phase of development assumes that the Improvements to Existing Runway 12-30 to Conform to Current FAA Standards have already taken place. In addition to those improvements, the major elements of this phase of the Proposed Alternative affecting water quality include the extension of Runway 12 and Taxiway A by 1,354 feet, relocation of Runway 12-30 navigational aids, the construction of two deicing/hold pads along Taxiway A, and creating two high speed exit taxiways between Runway 12-30 and Taxiway A.

Filling, grading and paving in association with extending Runway 12-30 and Taxiway A by 1,354 feet to the northwest would affect water quality by construction of these elements and the continued airport operations that influence water quality. Development-related water quality impacts would result from increased impervious surface and increased stormwater volume. Temporary water quality impacts would likely occur during construction, but these would be controlled using erosion and sedimentation controls. Water quality impacts are detailed in the following subsections.

Grand Calumet River and Stormwater Drainage - The impervious area of the airport is expected to increase by approximately 16 acres under this alternative. Because the soils in the study area are sandy and will allow percolation, stormwater runoff is not expected to increase significantly. Since minimal flow increases are anticipated, no detention will be provided and the size of the existing discharge pipes or ditches would not be altered. Therefore, the existing culverts would serve to restrict flows to the river. Best Management Practices and engineering controls will be implemented to mitigate anticipated erosion and sedimentation impacts throughout construction, as well as post-construction during the operation of the proposed improvements. Measures may

[18] Gary/Chicago Airport Authority, prepared by Clean World Engineering, Ltd. *Conceptual Remediation Plan NBD Bank Trust Property Located within the Runway Extension Zone Northwest of Gary/Chicago Airpor*t, Gary, Indiana, November 2003.

include the use of silt fencing, sediment berms, interceptor ditches, hay bales, riprap dams, sedimentation basins, and other erosion and sediment control structures.

Aircraft/Vehicle Maintenance and Fueling Operations - These facilities, and others where petroleum-based products are in use, would be designed to minimize the potential for petroleum product discharge into stormwater. The airport would continue to use oil/water separators in all fueling areas as a BMP. The airport-wide SPCC and SWPPP would be updated to include the new facilities and appropriate activities.

Aircraft Deicing Activities – The forecasted increase in operations is expected to result in a proportional increase in aircraft deicing chemicals. The airport plans to expand the deicing facility based on the future needs of the entire airport. The project includes two new deicing pads on either runway end, which will move the application of deicing materials to a point closer to departure. The deicing/anti-icing runoff would continue to be directed to the public wastewater treatment plant. The existing deicing pad would be used much less frequently, but its functionality would be preserved so that the limited deicing activities that might still be desired in the terminal area could be captured and treated. The airport-wide SPCC and SWPPP would be updated to include the new facilities and appropriate activities.

Pavement Deicing and Anti-Icing Activities –The increase in runway and taxiway pavement is likely to increase deicing and anti-icing activities. The airport would use acetates and formates as their primary pavement deicer, using urea only in emergency situations. Thus, the application of deicing chemicals to the ultimate pavement areas should not impact water quality. The airport-wide SPCC and SWPPP would be updated to include the new facilities and appropriate activities.

Swales and Ponds - Most of the construction activities would occur northwest of Runway 12-30 in the contaminated Asphalt Wetlands. The remaining degraded swales and ponds within the construction area would be eliminated by the proposed activities.

Groundwater Remediation – As discussed in Section 5.19.6 (Hazardous Materials Mitigation), the construction activities in the contaminated asphalt wetlands would remediate contaminated groundwater and soil to reduced or eliminate the risk of groundwater contaminants (primarily metals and organic compounds) and to prevent further migration of contaminated groundwater.[19] The remediation would reduce or eliminate the discharge of contaminated groundwater to the Grand Calumet River. The remaining thick black tank bottoms and abandoned drums would be removed and disposed in an environmentally sensitive manner. Surficial soils would be removed

[19] Gary/Chicago Airport Authority, prepared by Clean World Engineering, Ltd. *Conceptual Remediation Plan NBD Bank Trust Property Located within the Runway Extension Zone Northwest of Gary/Chicago Airpor*t, Gary, Indiana, November 2003.

and replaced with clean fill. The proposed placement of a slurry wall upgradient of the contaminated zone and installation of extraction wells at the southern boundary of the property (near Gary Avenue) to pump and treat the groundwater should prevent migration of contaminated groundwater. Treated groundwater would be re-injected and/or combined with treated groundwater at the ongoing groundwater remediation efforts at the Conservation Chemical Site and the MIDCO II site.

5.6.4.4. Expansion of Existing Terminal

Development-related water quality impacts would result from increased impervious surface and increased stormwater volume. Temporary water quality impacts would likely occur during construction, but these would be controlled using erosion and sedimentation controls. Water quality impacts are detailed in the following subsections.

Grand Calumet River and Stormwater Drainage – The proposed project does not involve any work within the Grand Calumet River. However, the impervious area of the airport is expected to increase by approximately 0.5 acres under this alternative. Because the soils in the study area are sandy and will allow percolation, stormwater runoff is not expected to increase significantly. Since minimal flow increases are anticipated, no detention will be provided and the size of the existing discharge pipes or ditches would not be altered. Therefore, the existing culverts would serve to restrict flows to the river. Best Management Practices and engineering controls will be implemented to mitigate anticipated erosion and sedimentation impacts throughout construction, as well as post-construction during the operation of the proposed improvements. Measures may include the use of silt fencing, sediment berms, interceptor ditches, hay bales, riprap dams, sedimentation basins, and other erosion and sediment control structures.

Water Supply - Proposed expansion of airport infrastructure is mainly related to airfield development, with modest expansion of passenger handling facilities. Therefore, increased use of water supply is expected to be insignificant.

Sewage and Wastewater - The amount of sewage and wastewater produced by the airport is directly proportional to the number of passengers and workers using airport facilities. Due to the anticipated modest increase in the number of passengers and employees, the sewage and wastewater generated by the airport are not expected to increase significantly. It is anticipated that the existing wastewater treatment facilities will accommodate the increased flows.

5.6.4.5 Acquisition and/or Reservation of Sites for Future Passenger Terminal and Air Cargo Facilities

Securing sites for future passenger terminal and air cargo facilities is not expected to impact the water quality of the project area. The surface and groundwater features of these areas northwest of the existing runway have been described. The actual development of these sites will be defined as the need arises and will be subject to a separate environmental review at that time.

5.6.5 Summary of Findings

The Proposed Action has the potential of improving water quality in the immediate area of the airport because of the remediation of contaminated soil and groundwater in the area northwest of the runway.

5.6.6 Mitigation

5.6.6.1 Mitigation Considerations

Erosion and sedimentation control measures will ensure compliance with the U.S. Environmental Protection Agency document titled *Storm Water Management for Construction Activities* and State of Indiana water quality standards. A detailed, site-specific Erosion and Sedimentation (E&S) Control Plan would be prepared to address all earth disturbance aspects of the proposed improvements. The E&S Control Plan would include the use of Best Management Practices and engineering controls to mitigate anticipated erosion and sedimentation impacts throughout construction, as well as post-construction during the operation of the proposed improvements. Measures may include the use of silt fencing, sediment berms, interceptor ditches, hay bales, riprap dams, sedimentation basins, and other erosion and sediment control structures.

The E&S Control Plan would also include a seeding and revegetation plan for temporarily disturbed areas. Seeding and revegetation shall follow the appropriate seasonal periods. Use of native grasses to revegetate disturbed soils shall occur where feasible, effective and economical. No plant materials considered to be invasive as defined by Executive Order 13112 shall be used; regional native plant species shall be favored as defined by Executive Order 13148. If measures in the E&S Control plan are approved and correctly utilized during construction and operation, soil erosion and resulting sedimentation of the Grand Calumet River will be minimized to less than significant levels.

Best Management Practices will be instituted to control the quality and quantity of stormwater generated by the airport. Due to the sandy soils in the study area, it is not anticipated that stormwater runoff will increase significantly. Additional drainage ditches may be constructed to convey the runoff to existing pipes or ditches. No new outfall would be constructed to the Grand Calumet River. Since minimal flow increases are anticipated, the size of the existing discharge

pipes or ditches would not be altered. Therefore, the existing culverts would serve to restrict flows to the river to allow for further infiltration.

5.6.6.2 Water Quality Permitting and Water Certification

Water resources are protected by Federal and state regulations. The *Federal Water Pollution Control Act*, as amended by the Clean Water Act of 1977, provides authority to Federal, state and local governments to establish water quality standards; control discharges into surface and subsurface waters; develop waste treatment plants and practices; and to issue permits for discharges, including dredged and fill material, into bodies of water. The *Indiana Water Pollution Control Act* provides IDEM authority to enforce the water quality standards and requirements as set forth in the *Water Pollution Control and Clean Water Acts*. This act governs "all waters of any river, stream, watercourse, pond, lake, coastal, ground or surface water, wholly or partially, within the state, natural or artificial," except for privately owned waters. IDEM, Water Quality Division implements its jurisdictional responsibilities under its Water Quality Criteria and Use Classification regulations. The State has also adopted an Antidegradation Policy for water quality. Specific water quality criteria for each use classification include standards for sewage discharge, pH, temperature, dissolved oxygen, toxic substances, taste and odor attributable to discharges, bacteria, radioactivity, and turbidity.

Due to impacts to the swales and wetlands by the proposed projects and the associated water quality issues, which would result from the proposed development, the following Federal and state permits will be required.

- In accordance with Rule 5 of IDEM's stormwater program, construction activities involving more than five acres require a NPDES stormwater discharge permit. Persons with sites greater than 1 acre but less than 5 acres are "invited to comply with this rule as well."[20] Since the proposed project will involve greater than 5 acres of construction, the Gary/Chicago International Airport will complete the following tasks in accordance with Rule 5: File a Notices of Intent (NOI) prior to the start of work; file a soil erosion control plan with the Lake County Soil and Water Conservation District; comply with the requirements outlined in the permit; and erect and maintain erosion control fences to prevent soil erosion.
- In accordance with Rule 6 of IDEM's stormwater program, NPDES Permit Number INR006051 has been issued to the Gary/Chicago International Airport for vehicle maintenance, repair and fueling, and aircraft deicing operation. In accordance with this permit, a SWPPP was developed for the airport in 1996 and updated in 2000. The proposed changes at the airport would require submission of an amended NOI and SWPPP to IDEM to address the changes.

[20] Indiana Administrative Code. Rule 5, 327 IAC 15-5-1. August 1, 2003.

- The *Fish and Wildlife Coordination Act, Section 2* requires that whenever waters of any stream or other body of water are altered or impounded, consultations with the U.S. Fish and Wildlife Service (USFWS) and the State agency having jurisdiction over wildlife services shall be conducted. These consultations have been initiated during the EIS process and will continue through the design and permitting phase of the project.
- *Section 404 of the Clean Water Act* provides the primary means of Federal protection of Waters of the United States. Section 404 established a permit program for discharges of dredged or fill material to be administered by the U.S. Army Corps of Engineers (Corps). The Corps also employs Sections 9 and 10 of the *1899 Rivers and Harbors Act* to protect navigable and coastal waters and associated wetlands. The Corps' regulations and guidelines for fill placement and other defined activities are contained in *33 CFR Parts 323 through 328* and *Part 330*. In addition, the Corps has issued Regulatory Guidance Letters to clarify certain aspects of the program. The Corps issues both individual and nationwide permits for wetland and waterway impacts. The nationwide permits are generic permits for categories of projects, such as utility crossings and hazardous waste remediation, which the Corps deems to have minimal impacts to wetlands. Due to the wetland and swale impacts of the proposed project, an individual permit will be required from the Corps.
- Under *Section 401 of the Clean Water Act*, projects involving discharges to waters of the United States, including wetlands, must obtain certification from IDEM that the project will not adversely impact the quality of the State's waters. Compliance with IDEM's Anti Degradation Rules would also be required for the build alternative.

Coordination is currently ongoing with IDEM and the Corps. Applications for the required permits will be formally submitted to IDEM and the Corps during the design phase of the project.

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