



Environmental Management System (EMS) Work Group, NCTCOG



EMS Design, Development and
Implementation: DFW International Airport

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EPA Welcomes DFW Airport as a Member of National Environmental Performance Track



- DFW's Environmental Management System has gained the Airport entry into EPA's National Environmental Performance Track Program
- Performance Track is EPA's National partnership that recognizes top environmental performance among participating U.S. facilities, both public and private
- Program members provide leadership in diverse areas of environmental performance, commit to continuous improvement & engage in robust public outreach
- Pollution prevention, source reduction & waste minimization are reflected in such areas as reducing facility energy use, air emission reduction, and protecting water quality standards in the nation's waterways
- DFW's Environmental Management System serves as a platform to achieve sustainable environmental excellence as the Airport standard and to advance the principles of sustainability

Acts of Environmental Stewardship Represent an Investment in Our Future and Add Immeasurably to our Collective Quality of Life



- DFW stepped up to this challenge by establishing an environmental compliance and natural resources awareness training program
- This Environmental Stewardship Training Program engages the participation of DFW's 1,650 employees in our airport-wide commitment to environmental stewardship
- DFW has demonstrated management's top-down priority commitment to your Board's declared priority to achieve beyond-compliance environmental excellence as the Airport Standard



Dallas/Fort Worth International Airport (DFW Airport) Environmental Management System (EMS)

About DFW Airport

- DFW is located in North Central Texas on the border of Tarrant and Dallas counties.
- DFW consists of approximately 18,000 acres (26 square miles) within the jurisdictional boundaries of five cities.
- The Cities of Dallas and Fort Worth jointly own DFW Airport which is operated by DFW's twelve member Board of Directors [DFW Board].
- DFW is the fifth busiest airport in the world in total passengers served [60,000,000+ annually].
- DFW is the third busiest airport in the world in terms of aircraft operations [2,200+ operations daily].
- Approximately 300 tenants and subtenants lease facilities or conduct activities at DFW.
- DFW Supports, directly and indirectly, 280,000 local jobs.
- DFW generates 12 Billion Dollars annually to the local economy.

Dallas/Fort Worth International Airport Environmental Management System (EMS)

Environmental Program Initiatives – Wake-Up Call February, 2000

- Federal and State Prosecuting and Enforcement Agencies Deployed at DFW Airport
- United States Department of Justice (DOJ)
- United States Attorney's Office
- Federal Bureau of Investigation - Agents
- U.S. Environmental Protection Agency
- Texas Enforcement Agency - TCEQ

ISSUE: CRIMINAL INVESTIGATION For Alleged Violations of the Clean Water Act

Primary Concern: Discharge of Pollutants to the Receiving Waters of United States/Texas

- Infrastructure Under Design: Surcharging; Hydraulic Deficiencies
- Spent Aircraft Deicing Fluids [SADF]

Dallas/Fort Worth International Airport Environmental Management System (EMS)

Design, Development and Implementation

- DFW's Board mandated the establishment of an Internal and External Strategic Communications Plan designed to identify progress toward achieving environmental leadership in the Board's May 2000 Strategic Plan.
- To that end, DFW's Environmental Affairs Vice President designed and established the communication plan in the form of an Environmental Management System [EMS] encompassing DFW Board Operations, Tenants and Contractors activities Airport wide.
- DFW's EMS has been designed, developed and is being implemented entirely "in-house" by DFW Board employees.
- This "in-house" effort has resulted in the development of DFW's EMS at an estimated cost savings to DFW's Board of \$1,500,000 and completion eighteen months sooner than initial out-source consultant estimates to deliver this work product.

Dallas/Fort Worth International Airport Environmental Management System (EMS)

DFW's Environmental Management System Design and Implementation Follows U.S. EPA's 12 Element Compliance Focused Model

- For the past several years, EPA has been evaluating new initiatives to assist organizations with systematically managing compliance with environmental legislation.
- Environmental Management Systems (EMSs) are one tool being emphasized to improve environmental compliance, pollution prevention and to foster environmental performance and stewardship throughout facility operations.
- An EMS is a set of problem identification and problem-solving tools that can be implemented by the employees in an organization.
- EMSs follow an approach of “plan, do, check, and act” which is a systems methodology rather than the traditional command and control approach.
- Personnel are required to evaluate the processes and procedures they use to manage environmental issues and incorporate strong operational controls and environmental roles and responsibilities into existing job descriptions and work instructions;
- Setting objectives and targets for managing facility environmental issues;
- Monitoring, measuring and evaluating facility progress in environmental performance both in areas that are regulated and areas that are not (e.g., demand-side issues such as water or energy use);
- Integrating the environment into everyday business operations. Environmental stewardship becomes part of the daily responsibility for employees across the entire organization, not just in the environmental department.

Dallas/Fort Worth International Airport Environmental Management System (EMS)

DFW's Compliance-Focused Environmental Management System Design:

- Provides a framework for managing environmental responsibilities and from which to optimize environmental compliance throughout the Airport.
- Meets EPA's *Corporate Compliance Criteria for an Effective Program to Prevent and Detect Violation of Law* [the twelve (12) elements of EPA's compliance-focused model].
- Provides background relating to each Department's business unit activities subject to environmental laws and regulations and those activities that present a potential environmental risk.
- Serves as a structured platform to integrate and apply DFW Board environmental response mandates including:
 - Recommendations contained in DFW external and on-going internal environmental compliance audits;
 - Implementation of DFW Board's Clean Air Policy addressing both mobile and stationary emission sources;
 - Completion of an Environmental Stewardship Training Program designed to ensure Airport-wide awareness of environmental issues;
 - DFW Board mandated participation of every DFW Board employee as Environmental Stewards in furthering environmental excellence as the standard at DFW Airport;
- Provides for DFW Airport's Auditor's Office taking lead responsibility in monitoring, confirming, verifying and independently reporting [to DFW's Board and Executive Management] the effectiveness of DFW's compliance-focused Environmental Management System implementation Airport wide.

Dallas/Fort Worth International Airport Environmental Management System (EMS)

DFW's Compliance-Focused Environmental Management System - 12 Elements

■ DFW's Compliance-Focused EMS was Designed In Accordance with the Twelve (12) Elements of US EPA's Office of Criminal Enforcement, Forensics and Training/National Enforcement Investigation Center (NEIC) 1-2000 Guidance [EPA-330/9-97-002R]

■ **Element 1 - Environmental Policy**

■ **Element 2 - Organization, Personnel and Oversight of EMS**

■ **Element 3 - Accountability and Responsibility**

■ **Element 4 - Environmental Requirements**

■ **Element 5 - Assessment, Prevention & Control**

■ **Element 6 - Environmental Incident and Noncompliance Investigations**

■ **Element 7 - Environmental Training, Awareness and Competence**

■ **Element 8 - Environmental Planning and Organizational Decision-Making**

■ **Element 9 - Maintenance of Records and Documentation**

■ **element 10- Pollution Prevention Program**

■ **Element 11- Continuing Program Evaluation and Improvement**

■ **Element 12- Public Involvement/Community Outreach**

Dallas/Fort Worth International Airport Environmental Management System (EMS)

DFW's Environmental Management System Objectives:

- Provides a systematic, organizational framework to assure environmentally regulated activity compliance throughout all Board Departments in response to DFW Executive and Senior Management's commitment.
- Improves environmental risk management and deployment of cost effective environmentally friendly processes compatible with operations, asset and project management missions and deliverables.
- Provides self-review protocols and use of environmental compliance checklists and internal auditing to oversee EMS implementation, confirm environmental compliance and report progress toward achieving continual environmental improvement at DFW Airport.
- Provides a structure from which to assign Board staff responsibilities and accountability to effectively manage and prioritize environmentally regulated activities.
- Reflects policy, protocols and operating procedures to assure efficient and effective spill response, mitigation, reporting and remediation when necessary.
- Provides the means for integrating environmental planning into organizational decision-making.
- Identifies and compels enhancement of staff environmentally related education and training, awareness and sensitivity as appropriate.
- Provides for periodic program performance external audits and continuous internal program Auditing to independently report EMS implementation effectiveness and progress toward achieving sustainable environmental compliance to DFW's Board and Executive Management.
- Incorporates a community outreach program to inform and involve DFW external stakeholders regarding DFW Board's environmental initiatives to continually improve environmental performance at DFW Airport.

Dallas/Fort Worth International Airport Environmental Management System (EMS)

DFW Benefits from EMS Implementation - While deployment of an EMS is presently not a legal requirement, voluntary implementation of a Compliance Focused EMS brings a variety of internal and external benefits:

Internal Benefits:

- A systematic approach to environmental compliance identifies opportunities to prevent pollution, reduce sources of potential pollution and minimize waste; and provides the means to accomplish these purposes.
- DFW's EMS assures effective implementation of the Board's Environmental Policy and serves as a vehicle for Executive Management's oversight and tracking of environmental compliance, continuous improvement and attaining recognition as an industry leader.
- Improves working relationships between Departments; furthers environmentally related cost efficiency over time; fosters environmentally friendly procurement; and improves coordination between capital development project planning, design, engineering, construction and maintenance Department professionals.
- Improves environmental compliance; reduces potential incidents of spills and releases thereby reducing potential DFW Board criminal and civil liability.
- Is dynamic, recognizing DFW's ever-changing operations landscape and continuously emerging environmental laws and regulations.
- Implementation is consistent with the expectations of the regulatory enforcement agencies at all levels of government and accesses DFW to governmental public policy incentives.
- EMS implementation encourages and facilitates the establishment of a facility corporate culture priority and commitment to sustainable environmental stewardship.
- Makes environmental compliance at DFW transparent.

Environmental Stewardship Training



Dallas/Fort Worth International Airport Environmental Management System (EMS)

Environmental Management System Implementation Approach:

- Executive Management's express empowerment and commitment to the purposes and processes of the EMS.
- Implementation of environmental compliance programs, protocols, procedures and practices to assure effective response to DFW Board's Environmental Policy.
- Self-regulating environmentally relevant program and activity monitoring and measuring to evaluate business unit management's adherence to EMS processes, environmental compliance policy and environmental stewardship.
- Supplemental staff training to provide additional activity-specific information and insight necessary to effectively carry out distributed environmental responsibilities and accountability.
- Each business unit, asset and project manager is responsible to maximize the application of DFW's EMS by reviewing their respective production processes, equipment, operations and services activities to identify environmentally regulated aspects of their activities and sources presenting the potential for environmental risk.
- Providing DFW operations, asset and project managers technical support to strengthen application of Best Management Practices to optimize environmental compliance through pollution prevention, source reduction and waste minimization.
- Establishing self-policing protocols [environmental compliance checklists], internal and external EMS implementation audits and reporting EMS implementation effectiveness and progress toward achieving sustainable environmental improvement to DFW's Board and Executive Management.

Dallas/Fort Worth International Airport Environmental Management System (EMS)

External Benefits:

- Increases credibility with regulatory agencies at all levels of government.
- Increases credibility with DFW stakeholders and customers.
- Provides a framework for regulatory agencies to extend greater latitude and lead time for DFW to conduct vital studies and obtain indispensable additional data to allow scientifically-defensible design and technology deployment responsive to remaining unresolved environmental issues of concern.
- Supports and facilitates continued growth at DFW furthering economic benefit throughout the North Texas Region.
- Provides greater opportunities and incentives to go beyond environmental compliance in achieving environmental leadership through the pursuit of environmental excellence:
- Showcasing environmental leadership in the industry can take the form of exploring and pioneering application of leading edge technology;
- Inviting pilot projects to prove the performance capabilities of innovative technology applicable to DFW operations in such areas as emissions reduction, energy efficiency, environmentally friendly building design and operations to name a few;
- Implementation of DFW's EMS by DFW Board managers will foster improved application of Best Management Practices Airport-wide and provide a demonstrated role model for Board contractors and tenants as well;
- Accesses DFW Airport to regulatory authority penalty mitigation policies should issues of non-compliance arise.

Dallas/Fort Worth International Airport Environmental Management System (EMS)

Environmental Affairs Department [EAD] Program Accomplishments

- Completed a five successive years of advancing DFW Airport Board environmental initiatives and enhanced compliance program implementation with no Notices of Violations or Notices of Enforcement issued by TCEQ.
- Completed Environmental Stewardship Training for all 1750 Airport Board employees per Board directive; and on-going for new hires.
- Created a Watershed Map using Computer Aided Design (CADD) and Geographic Information Systems (GIS) to facilitate Clean Water Act environmental compliance.
- Established a Watershed Management Program [includes measuring receiving water flows and sampling for potential pollutants] that provides data to demonstrate that DFW Airport core environmental programs are responsive to applicable environmental laws and regulations
- Implemented a joint Ecological Risk Assessment study with the United States Geological Survey to further demonstrate DFW Airport compliance with applicable environmental laws and regulations

Watershed Drainage Map



Dallas/Fort Worth International Airport Environmental Management System (EMS)

Environmental Affairs Department [EAD] Program Accomplishments (Continued)

- Conducted an engineering study leading to installation of seventeen (17) Oxygenators/Aerators in DFW's Trigg Lake to maintain dissolved oxygen (DO) levels consistent with water quality standards following deicing activities.
- Provided Deicing Accredited Supervisor training to 450 DFW Airport tenant employees and contractors
- Designed, Developed and implemented a comprehensive, Compliance-Focused Environmental Management System encompassing DFW Board Operations
- Went "live" with an EAD Intranet web site featuring access and availability to DFW Board employees of Environmental Affairs Department staff, core compliance programs, environmental stewardship, the 12 element environmental management system, and to provide technical and regulatory assistance as requested
- Prepared, updated and implemented DFW's Texas Pollution Discharge Elimination System (TPDES) Stormwater Pollution Prevention Plan, Hazardous Waste Management Plan, Spill Prevention Control and Countermeasure Plan, Solid Waste Management Plan, Title V Annual Emissions Inventory and obtained a DFW Airport Title V air emission source permit in concert with requirements of applicable law

Trigg Lake Aerators



Dallas/Fort Worth International Airport Environmental Management System (EMS)

Environmental Affairs Department [EAD] Program Accomplishments (Continued)

- Prepared a comprehensive emissions inventory including aircraft, ground support equipment, on-road mobile emissions and terminal construction emissions to further DFW's capital development program and enhance the accuracy of North Central Texas Council of Governments (NCTCOG) and Texas Commission on Environmental Quality (TCEQ) regional emission reduction efforts
- Achieved aircraft air emission reductions resulting from opening of 18L runway extension resulting in reduced aircraft taxi time
- Assisted in maintaining Terminal D and Airport People Mover (APM) projects within approved air emission budgets
- Installation of Category (CAT) III Instrument Flight Rule (IFR) capabilities thereby reducing airport delay and associated air emissions
- Increasing the size of DFW Airport's Alternate Fueled Vehicle (AFV) fleet

Trigg Lake Outlet



Dallas/Fort Worth International Airport Environmental Management System (EMS)

Environmental Affairs Department [EAD] Program Achievements

- Reduced air emission by 95 percent
- Captured and treated 5 million pounds of spent aircraft deicing fluids preventing discharge to the creeks and rivers surrounding the Airport
- Replaced aged boilers and chillers with state-of-the-art technology reducing nitrogen oxide emissions by 39 tons a year
- Replaced 100 percent of the light-to-medium duty fleet; 72 percent of heavy duty and off-road fleet; and 100 percent of the bus and shuttle van fleet – all reducing nitrogen oxide emissions by 475 tons a year
- Reduced our energy footprint by 25 million British Thermal Units (MMBTUs)
- Reduced 2.5 million cubic yards of excavated soil saving \$1.5 million in materials acquisition costs
- Recycled 355,000 tons of demolition debris for on-airport cement production
- Recycled 180 tons of white paper per month
- Recycled 169 tons of cardboard per month
- Recycled 4,000 pounds of spent fluorescent light bulbs
- Recycled 6,000 gallons of used oil and seven cubic yards of spent oil filters annually