

5.0 POLLUTION PREVENTION MEASURES AND CONTROLS

BMPs are implemented to control potential storm water pollution. BMPs can describe a wide variety of procedures, inspection schedules, prohibition of activities, and other management strategies to prevent contamination of storm water runoff. BMPs can also include facilities that manage runoff to prevent contact between pollutants and runoff, and facilities that reduce pollutant levels in the runoff once contact has been made. As such, BMPs tend to be grouped into two categories—non-structural controls and structural controls.

Non-structural controls, sometimes called source controls, are primarily management-based activities that are generally designed to prevent or reduce the potential of storm water runoff contact with pollution-causing activities. Non-structural BMPs can be along functional areas, including planning, reporting, training, spill prevention, preventive maintenance, and good housekeeping activities. Non-structural controls can be selected based on land use activity, and can be targeted toward specific pollutants (e.g., floatables, chemical storage, and use practices), or be broad-based (e.g., public education, street-sweeping).

Structural controls are more traditionally associated with storm water management. Structural controls are constructed facilities or vegetative practices that are generally designed to reduce or prevent pollutant levels in storm water runoff. Targeted pollutants include particulates, pollutants that bond to particulates (trace metals), nutrients (phosphorus, nitrogen), oil and grease, biological and chemical oxygen demand substances such as organic compounds, and, to a limited extent, bacteria. Typical structural controls include wet ponds, dry extended detention ponds, grass swales, grass-lined ditches, sand filters, covered work or storage areas, spill containment berms, and drainage system improvements.

BMPs have been developed for DAL and are included within each of the measures discussed in this section. The BMPs to be implemented at DAL cover the following areas presented in *Table 5.1*.

Table 5.1 Best Management Practices for Pollution Prevention

BEST MANAGEMENT PRACTICES	
1.	Good Housekeeping
2.	Spill Prevention and Response
3.	Erosion Control
4.	Maintenance Program for Structural Controls
5.	BMPs (Inclusive to all other measures and controls listed)
6.	Deicing/Anti-Icing
7.	Employee Training Program and Employee Education
8.	Periodic Inspections
9.	Quarterly Visual Monitoring
10.	Record Keeping and Internal Reporting Procedures

BMPs are inclusive to all of the pollution prevention measures and controls listed in *Table 5.1*. The emphasis is on non-structural approaches to minimize or eliminate contaminant exposure to storm water runoff. An index of BMPs to industrial activities is summarized in *Table 5.2*. For example, *Good Housekeeping Practices at Aircraft, Vehicle, and Equipment Cleaning Areas* are to be used for Aircraft Maintenance, Equipment Maintenance, Painting, or Vehicle Maintenance activities as indicated by an “X” in the first row of *Table 5.2*. In fact, the first six rows in *Table 5.2* reference good housekeeping practices and relate to BMP 1 shown in *Table 5.1*. BMPs 7, 8, 9 and 10 in *Table 5.1* are not directly addressed in *Table 5.2*, because major elements of these BMPs have already been integrated into the BMPs contained in *Table 5.2*. These integrated BMPs include training activities, recordkeeping and reporting procedures, prohibiting non-storm water discharges into the airport storm water drainage system and erosion control. Each of the BMPs contained in *Table 5.1* are described in greater detail in following subsections.

Responsibilities of Facilities that Discharge Industrial Storm Water Runoff

1. Comply with BMPs that pertain to operator’s industrial activities.
2. Prohibit non-storm water discharges, including aircraft and ground vehicle wash water or spill clean-up wash water, from discharging into the airport’s drainage system.
3. Implement inspection program for operator’s industrial areas at schedules specified in SWPPP.
4. Conduct employee training program as specified in SWPPP.
5. Document activities and keep records for three years.

Table 5.2 Index of Best Management Practice to Industrial Activities

Best Management Practice	FACILITY ACTIVITY																			
	Maintenance				Washing			Storage						Fuels		De-icing		Controls		
	AM	EM	VM	PN	AW	EW	VW	AG	CS	HW	L/U	OL	UG	FD	AF	AD	AI	OWS	EC	
5.1.1 Good Housekeeping Practices for Aircraft, Vehicle, and Equipment Maintenance Areas	X	X	X	X																
5.1.2 Good Housekeeping Practices for Aircraft, Vehicle, and Equipment Cleaning Areas				X	X	X	X													
5.1.3 Good Housekeeping Practices for Aircraft, Vehicle, and Equipment Storage Areas	X	X	X	X																
5.1.4 Good Housekeeping Practices for Material Storage Areas								X	X	X	X	X	X			X	X			
5.1.5 Good Housekeeping Practices for Fueling Areas								X					X	X	X					
5.1.6 Good Housekeeping Practices for Runway Maintenance								X					X							
5.2 Spill Prevention	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
5.3 Erosion Control																		X	X	
5.4 Maintenance Program for Structural Controls																		X	X	
5.6 Deicing/Anti-Icing																X	X			
5.8 Inspections	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

“X” Required

AD Aircraft Deicing/Anti-Icing Operations
 AF Aircraft Fueling Operations
 AG Aboveground Storage Tank
 AI Ramp Deicing/Anti-Icing Operations
 AM Aircraft Maintenance and Refurbishing
 AW Aircraft Washing Operations
 CS Chemical Storage

EC Erosion Control Devices
 EM Equipment Maintenance
 EW Equipment Degreasing or Washing
 FD Fuel Dispatching, Distribution, or Handling
 HW Hazardous Waste Handling/Storage
 L/U Loading/Unloading Areas
 OL Storage of Oil or Antifreeze

OWS Oil/Water Separator
 PN Painting Aircraft/Vehicles
 UG Underground Storage Tank
 VM Vehicle Maintenance
 VW Vehicle Washing

5.1 Good Housekeeping

Good housekeeping BMPs are implemented to reduce the amount of pollutants generated on-site or coming into contact with storm water. The following is a listing of areas of industrial activity that are covered by the SWPPP and occur on-site at the airport:

- Aircraft, ground vehicle, and equipment maintenance areas
- Aircraft, ground vehicle, and equipment cleaning areas
- Aircraft, ground vehicle, and equipment storage areas
- Material storage areas
- Aircraft fuel system and fueling areas
- Runway maintenance

Each activity shall be followed by a descriptive summary of good housekeeping BMPs that are to be employed. Material management practices are also emphasized to reduce the risk of spills. *Appendix I* indicates the locations of these industrial activities and existing structural control measures to reduce storm water pollutants in relation to major drainage basins.

5.1.1 Aircraft, Ground Vehicle, and Equipment Maintenance Areas

Tenants involved in the following activity will implement the BMPs listed below:

Activity: Aircraft, Ground Vehicle, and Equipment Maintenance or Painting

- Drip pans to contain leaks or spills shall be used whenever practicable for all maintenance activities. Materials collected in the drip pans shall be disposed of properly.
- Major maintenance activities, such as engine changes, hydraulic line repairs, fuel line repairs, or painting, shall be performed in a covered area whenever possible.
- The operator shall have a spill prevention plan on-site readily accessible, and employees shall be trained in the execution of the spill plan or shall follow the procedures outlined in this plan.
- Dry clean-up methods shall be used for spills whenever possible. Spill containment equipment shall be located on-site where maintenance activities are performed. Such equipment may include a waste material container, drip pans, and absorbent and containment materials. When

- Material Safety Data Sheets (MSDS) for hazardous materials shall be kept current and accessible to users.
- Weekly visual inspections of all maintenance or painting areas shall be performed to verify that no spills are being left unattended, and to check that waste materials or fluids generated have been removed and properly stored while waiting for pick-up and off-site disposal.
- Fluids, oils, and grease needed for maintenance shall be stored and dispensed in a covered area when practicable.
- Containment structures or containment pallets shall be used for all drums and containers that are periodically accessed, and for all drums and containers where liquid waste products are stored waiting for transport and off-site disposal.
- Waste oil shall be stored indoors whenever practicable. If stored outdoors, waste oil shall be kept in a covered area on spill containment pallets or have other secondary containment features. All containers shall be clearly marked and properly labeled.
- Drain funnels or air pumps shall be used whenever waste fluids are transferred from one container to another. The waste fluid tank shall include an overflow protection system where practicable to minimize the risk during transfer operations.
- Rags or wipes used with thinners, solvents, or other hazardous cleaning fluids shall be collected and handled appropriately according to applicable local, state, or federal regulations.
- Operators shall cover or block off indoor floor drains connected to the airport storm water drainage system, or prevent (using some other method) the discharge of non-storm water into indoor floor drains that are connected to the airport storm water drainage system. If the discharges are covered under a separate TPDES discharge permit and a TCEQ wastewater discharge permit, this task will not be necessary. Each operator is responsible for determining the indoor plumbing schematics of its respective lease space.

5.1.2 Aircraft, Ground Vehicle, and Equipment Cleaning Areas

Tenants participating in the following activities will implement the BMPs listed below:

Activity: Aircraft and Ground Vehicle Wash Areas

- Aircraft and ground vehicle washwaters are prohibited from entering the airport storm water drainage system. City of Dallas code requires industrial users to have a permit to discharge into the wastewater system. Any washwaters discharged into the sanitary system are subject to the City of Dallas Wastewater Pretreatment regulations of the Dallas City Code, Volume II, Chapter 49, Sections 49-42, 49-45, and 49-47. Section 49-42 of the Dallas City Code lists wastes prohibited in the wastewater system. Washwater may also be recycled. If the storm drain is temporarily plugged and a temporary berm is erected around the plane or vehicle, washwater may be removed by a vacuum truck or other method, and properly disposed of off-site by a permitted contractor or on-site into the sanitary system, providing all pretreatment and permitting requirements are met. If washwaters are routinely disposed into the airport storm water drainage system, a separate TPDES discharge permit or a TCEQ wastewater discharge permit is required to cover these washwaters.
- Aircraft washing using dry wash methods may be used with proper clean-up procedures that remove and properly dispose of all waste material.
- Steam-cleaning discharges from engines or other aircraft or vehicle parts are prohibited from entering the airport storm water drainage system.
- Hosing down of a maintenance bay, hangar area, or apron area with detergent, an emulsifier, or any other type of chemical additive is prohibited, unless the washwater is collected and properly disposed of off-site by a permitted contractor or on-site into the sanitary system, providing all pretreatment and permitting requirements are met.
- Periodic visual inspections of all aircraft or ground vehicle wash areas shall be performed to verify that waste washwater is not draining to the airport storm water drainage system.

Activity: Equipment Cleaning Areas

- Equipment washing, handwashing, triple rinse water, and steam cleaning discharges are prohibited from discharging into the airport storm water drainage system.

- No cleaning solvents, emulsifiers, or detergents used in any cleaning operation are authorized to drain to the airport storm water drainage system.

5.1.3 Aircraft, Ground Vehicle, and Equipment Storage Areas

Tenants involved in the following activity will implement the BMPs listed below:

Activity: Aircraft and Ground Vehicle Storage Areas

- Drip pans or other appropriate means shall be used under all aircraft or ground vehicles intended for long-term storage or that are leaking fluids. If drip pans are used, level of fluid collected shall be checked frequently to ensure the fluid does not overflow. If drip pans are not used due to foreign object debris (FOD) concerns, pavement area around aircraft shall be routinely inspected and cleaned as appropriate.
- Ground service equipment, vehicles and/or aircraft found to be leaking fluids shall be taken out of service until repaired.

5.1.4 Material Storage Areas

Tenants participating in the following activities will implement the BMPs listed below:

Activity: Hazardous Materials (Including, but not limited to, Section 313 Water Priority Chemicals)

- The hazardous material containers shall be kept closed at all times except for adding or removing materials. Spill containment measures shall be provided for all hazardous materials that are periodically accessed for adding or removing materials.
- MSDS for hazardous materials shall be accessible when needed.
- Spill containment equipment appropriate to the size of operation shall be located on-site where maintenance activities are performed or hazardous materials are stored. Such equipment shall include a waste material container, drip pans, and absorbent materials.
- Weekly visual inspections of all hazardous material storage areas shall be performed to verify that storage areas are clean and no leaks or spills are present.
- Hazardous materials (including Section 313 chemicals) in containers (including dry bulk materials in a paper wrapping) shall be stored indoors whenever practicable.

- If stored indoors and a functional storm water drain is located inside the building, secondary containment shall be provided.
 - If stored outdoors, a spill response container (i.e., spill cleanup materials appropriate for specific storage area in question) shall be placed with the hazardous materials.
 - If stored covered outdoors, metal containers shall be placed on spill containment pallets.
 - If stored uncovered, the hazardous materials shall be placed on pallets and provided with secondary containment.
- All hazardous waste containers shall be clearly marked, properly labeled, and maintained in good condition.
 - Drain funnels or air pumps shall be used whenever waste fluids are transferred from one container to another.
 - Rags or wipes used with hazardous materials, including Section 313 chemicals, or used for the clean-up of small spills shall be collected and handled appropriately according to applicable local, state, or federal regulations.
 - Employees responsible for loading or unloading wastes and liquid chemicals shall be properly trained and familiar with the emergency spill clean-up procedure.

Activity: Material Storage Areas

- Spill containment equipment appropriate to the size of operation shall be located on-site. Such equipment shall include a waste material collection container, drip pans, and absorbent materials.
- The operator shall have a spill response plan on-site readily accessible, and employees shall be trained in the execution of the spill plan or follow the procedures outlined in the Operating Instructions (OI).

Activity: Dry Material Storage Facilities

- Dumpsters/large waste containers shall be covered when not in use. The cover shall be sloped to drain water off the dumpster.
- Dumpsters/large waste containers shall be used for dry waste only.
- Raw materials, such as gravel, sand, topsoil, or compost, shall be stored in a diked or bermed area, or covered with a tarpaulin or temporary plastic sheeting where practicable.

5.1.5 Airport Fuel System and Fueling Areas

Tenants involved in the following activity will implement the BMPs listed below:

Activity: *Fueling*

- Fuel dispensing valves, hose clamps, seals, and sump pits shall be visually inspected on a weekly basis by the fuel operator to detect leaks or mechanical deficiencies.
- The fueling operator shall perform weekly visual inspections to verify that automatic cutoff valves work. Weekly inspections shall include fuel-dispensing equipment for leakage or spillage on fuel trucks. Replace all faulty parts as soon as practicable, but not longer than 10 days after discovery. Parts that shall be inspected include but are not limited to hoses, nozzles, valves and gauges.
- Tenants involved in fueling activities shall have a Spill Prevention Response Plan, and employees shall be familiar with this plan and trained in spill control.
- The fueling operator shall have spill clean-up materials in a readily accessible location. The fueling area shall have a readily accessible emergency shut-off valve or button.
- Fueling equipment, such as refuelers and fuel carts, shall carry fuel spill clean-up materials on the vehicle to contain spills less than five gallons that occur during fueling of aircraft or ground support vehicles located at remote areas of the airport.
- Fuel farms and sites of aircraft fueling shall have fuel spill cleanup material on-site.
- Trained personnel shall be present during the transfer of fuel between fueling vehicles and fuel tanks.
- Spills shall be cleaned up immediately. Fuel spills shall be reported to DOA in accordance with the DOA Airport Emergency Plan, contained in the DOA Airport Certification Manual. A master copy of the Emergency Plan is kept by Airport Operations. In addition, the DFD can activate the City's Master Emergency Operations Plan (MEOP), Subplan 1A: Hazardous Material Response Plan, as determined by the DFD Incident Commander.
- Absorptive pads, pillows, or blankets may be placed beneath aircraft, ground vehicles, and fuel tankers during fueling operations where practicable, as long as the action does not pose a fire hazard.

- Fuel trucks shall only be parked overnight in an area where a spill kit is readily available. If a tenant is required by the EPA to have an SPCC plan, then overnight parking of fuel trucks shall comply with EPA regulations. The SPCC plan must be on file with the DOA.
- Fueling of field equipment such as mowers shall be performed a minimum of 50 feet from any storm drain inlets.
- Training of employees on proper fueling techniques and spill response methods shall be thoroughly documented and maintained by each tenant.

5.1.6 Runway Maintenance

Removal of rubber deposits and runway painting are two uncommon airside maintenance activities at DAL.

- If called upon for removal of deposits on runways, DOA or its contractor may apply an alkaline soap to soften the rubber. High-pressure water is then applied to the rubber to separate it from the pavement. The residual deposits are then rinsed from the runway.
- To prevent rubber particles from migrating into the storm sewer system, a scrubber, vacuum truck, or other suitable type of equipment will be used to pick-up rubber particles off the runway.
- Paint fragments that do not contain lead or chromium shall also be removed by suitable equipment. Competent hazardous-material-handling contract personnel shall remove paint fragments that contain lead or chromium. These materials shall be removed from the site and disposed of properly.

5.2 Spill Prevention and Response

DAL has an Airport Emergency Plan in accordance with the requirements outlined in Part 139 of the FAA Regulations. In addition to defining the roles and responsibilities of all airport personnel to aircraft emergency situations, the emergency plan also addresses DOA's emergency response to hazardous spills. Please refer to the Airport Emergency Plan for Operation Instructions (OI).

Aircraft fueling is performed at the airport terminals, gates, and parking ramps using either a hydrant system or fuel trucks. The fuel is hand pumped into the receiving aircraft. If fuel vents from an aircraft

during delivery due to a malfunction of an aircraft fuel system component (i.e. inoperable auto shut-off, faulty valves or gauges), the leaseholder, or as otherwise agreed to through contractual obligation, is responsible for responding to and cleaning-up the spill. Airport operators engaged in fueling shall visually inspect all of their equipment and/or trucks to detect leaks or mechanical difficulties. The fueling operator is responsible for spill response if the spill results from failure to follow proper fueling procedures, leaks or component failure of the fuel dispensing equipment. The fueling operator shall respond to any fuel spill within the operator's leasehold. Hence, the party that causes the spill is responsible for spill response, reporting to the appropriate authority, clean-up, and proper disposal of all contaminated or waste material.

If the spill is beyond the response capability of the responsible party and affects the operations of the airport, a hazardous materials spill contractor shall be called in to provide trained personnel and equipment for spill clean-up and waste material disposal. Should these expert hazardous spill response contractors be unable to reach the site immediately, the responsible party shall contain the spill to prevent the spill from migrating into the storm sewer system or contaminating adjacent channels or natural waterways. For purposes of this plan, spills of 25 gallons or more of fuel or a reportable quantity of any other chemical shall be recorded by DOA on the form held in *Appendix A*.

Training of airport operators involved in fueling operations shall be provided annually to reinforce responsibilities and actions necessary to implement spill prevention procedures. Rapid spill response procedures, which protect drainage structures and a coordinated airport-wide spill notification procedure should be stressed. These procedures are contained in DOA OIs. DAL DOA OI for Reporting and Handling of Hazardous Spills are contained in the Airport Emergency Plan. These procedures are to be followed on all significant spills greater than a priming spill. Tenants who are required to have a SPCC Plan should implement procedures outlined for their leased area. All spills of one gallon or more shall be reported to the DOA Environmental Section.

Table 5.4 Participants of the SWPPP that are Currently Maintaining a SPCC Plan

Department of Aviation Dallas Love Field	Jet Aviation
Gulfstream	Associated Air Center
Vitesse	Sky Tanking
Landmark Aviation	Signature Flight Support
Business Jet Center	

5.2.1 Spill Prevention Procedures

- Airport operators engaged in fueling shall visually inspect all of their fueling equipment and/or trucks weekly to detect leaks or mechanical deficiencies.
- All spills of 25 gallons or more of fuel or a reportable quantity of any other chemical in operator's area shall be recorded in *Appendix E*.
- Each permanent container and secondary containment storing hazardous materials shall be visually inspected weekly for leaks, spills, or deterioration and inventoried by tenant, operator, or airport authority within their respective material storage areas. All temporary containment devices shall be inspected before use and immediately after use in order to determine if the container is fit for reuse and can be safely stored.
- Hazardous material/waste transporters shall be visually inspected for leaks prior to loading or unloading operations.

5.2.2 Spill Containment Procedures

- For purposes of this plan, all spills of 1 gallon or more of fuel or a reportable quantity of any other chemical shall be reported to DOA Operations and to the proper regulatory agency if necessary. Reportable spills shall be recorded on the spill log.
- Airport operators that use significant materials capable of spillage shall maintain a spill response capability appropriate to contain up to a 50 gallon spill. Capability includes emergency and personnel protection equipment, spill absorbent, containment, or personnel protection materials and supplies available to responsible parties or maintenance personnel.
- Spill response equipment shall be inventoried after each use, but no less than once a quarter, and supplies replaced as necessary.
- Initial response shall be to identify the substance, isolate the source, stop the pump, and close the valve if need be. Consult the MSDS if necessary. Once the spill material is identified, its hazards shall be identified and appropriate precautions taken to stabilize the immediate scene, including evacuation, donning personnel protection equipment, etc. If the spill is beyond the response capability of the responsible party, back-up shall be called for from a hazardous materials spill

- After securing the immediate scene, spill containment is to be initiated. Spill response shall isolate the spill and prevent it from entering the airport storm water drainage system. Spill isolation methods include berming, plugging or covering storm water inlets or manholes, berming or booming channels, or applying absorbent spill containment materials. Available sluice gates or valves shall be closed.
- After containment is achieved, material shall be neutralized, if needed, and clean-up begun. Clean-up materials and equipment may include scrubbers, vacuum trucks, sponge rollers, or absorbent materials, such as PIG blankets, pillows, and mats.
- Operator shall remove plugs, covers, and berms; and open all valves or sluice gates that were closed to provide spill containment.
- Spill clean-up waste materials and washdown fluids shall be properly collected and disposed.

5.2.3 Spill Prevention and Response Plan

In situations where tenants are not required to maintain a SPCC Plan, co-permittees are responsible for developing a site-specific Spill Prevention and Response Plan for their leasehold. A copy of this Spill Prevention and Response Plan shall be sent to the DOA. Spill Prevention and Response training shall be included in annual training of employees. The Spill Prevention and Response Plan shall include the following components:

- Identification of locations where potential spills could contribute to storm water discharges.
- Identification of storm drain inlets within and adjacent to leasehold.
- Spill prevention methods and procedures to minimize or prevent contamination from spills (include means of secondary containment).
- Location of spill response kits (include: type and amount of material and equipment to be maintained)
- Location of other material and equipment necessary for spill cleanup.
- Spill cleanup techniques (include types of material [booms, absorbents,etc.]), how they are applied and contained. Identify disposal procedure.

- Indicate proper spill reporting procedures.
- Outline Good Housekeeping Practices and BMPs intended to prevent spills.

5.3 Erosion Control

Erosion control measures can include but are not limited to vegetative cover, slope contouring, paving, and structural controls. Vegetative cover, slope contouring, rip rap, and other structural controls all help in reducing the velocity of storm water runoff, thus decreasing the potential for soil erosion.

Although paving generally increases the velocity of storm water runoff, it is commonly used in areas that receive concentrated amounts of runoff such as roads and around buildings. Paving can be an effective erosion control measure especially if it is used in conjunction with a velocity-reducing device (grassed swales or rip rap) at the outfall location.

Any of the measures (or combination of measures) listed above shall be used to control and reduce soil erosion in areas of the facility that have ongoing erosion problems or potential for soil erosion. These areas will be identified during the annual Comprehensive Site Compliance Evaluations.

When construction activity at the airport involves five or more acres, the contractor responsible for the activity shall submit a Construction General Permit NOI to the proper permitting agency. For one or more acres but less than five acres, a construction site notice shall be submitted to the downstream MS4 operator. The contractor shall also prepare and implement a SWPPP for the duration of the construction project for both categories of construction activity, indicating the locations and types of sediment and erosion controls to be used. During construction, visual inspections shall be conducted for open channels, roadside ditches, detention ponds, and outfall structures to identify any erosion problems. If significant erosion areas are identified, stabilization measures shall be implemented.

5.4 Maintenance Program for Structural Controls

Preventive maintenance activities have been implemented at DAL. These proposed preventive maintenance measures are intended to enhance the existing preventive maintenance activities by identifying conditions that could cause breakdown or failures resulting in discharging of pollutants to surface waters, and include the following components:

Inspections shall be conducted quarterly on all stormwater structural controls, including but not limited to oil/water separators, catch basins, sediment ponds, grass swales, berms and mechanical equipment that is part of the structural controls (i.e. valves, sump pumps, etc.). Maintenance shall be performed as deemed necessary by the inspections listed above. Inspection personnel shall be qualified personnel selected by the PPT. The inspector shall record the estimated volumes of solids removed from catch basins, settling ponds and other similar control structures. This record shall be kept for inclusion in the SWPPP addendum.

5.5 Best Management Practices

BMPs have been integrated into all measures contained in this section. The EPA Publication entitled *Storm Water Management for Industrial Activities Developing Pollution Prevention Plans and Best Management Practices* (EPA 832-R-92-006) was published in 1992 as a guidance document for industrial facilities to comply with industrial storm water permits. Many of the BMPs presented in this section are described in this document and have become standard measures used to prevent or minimize the contamination of runoff. Other BMPs contained in this section are site specific and were suggested by the tenants for their specific tenant areas and industrial activities.

5.6 Deicing/Anti-Icing

The DOA is responsible for runway deicing/anti-icing operations and is required to periodically re-evaluate present operating procedures. In this way, alternative practices can be considered for reduction of the overall amount of deicing/anti-icing chemicals used therefore reducing the environmental impact of the pollutant source.

Severe weather is an infrequent event in Dallas, Texas. To prepare for the possibility of severe weather, DAL has developed an OI giving freezing weather instructions that detail the procedures and priorities for preventing or removing ice and snow formations on walkways, streets, parking areas, and exposed water lines. The procedures describe responsibilities of DOA Airport Operations. A copy of this OI is contained in the *Airport Emergency Plan*.

This Snow Plan shall be updated periodically to include information detailing the deicing/anti-icing

agents to be used, equipment necessary to apply the chemical agents, and environmental oversight considerations.

Deicing/anti-icing is necessary to ensure safety of the aircraft and its passengers during winter weather. The combined efforts of the airport and tenants are designed to minimize the amount of deicing/anti-icing fluid that goes into the storm water system and, subsequently, into the creeks and lakes surrounding the airport.

5.6.1 Aircraft Deicing (Tenant Operations)

- Duties of airlines and tenants conducting deicing/anti-icing operations:
 - Contact Airport Operations each day that you conduct deicing/anti-icing.
 - At the end of the deicing/anti-icing event (which could be the end of the day or the end of multiple days of snow/sleet/ice), inform the Environmental Management Station via FAX (214-670-6051 or 214-670-6657) stating the amount of aircraft deicing fluid (ADF) used.

- Dry weather deicing/anti-icing to remove early morning frost:
 - Cover all storm drains within 50 feet of the airplane or area where the deicing/anti-icing process will occur to prevent the flow or discharge of ADF into the storm water system.
 - Conduct the deicing/anti-icing procedure.
 - Collect and remove the deicing/anti-icing residual amount remaining on the ground as soon as possible after the completion of each deicing procedure to minimize the pooling and/or discharge of ADF into the storm water system.
 - Collect the residual by utilizing a vacuum truck or absorbent material.
 - Properly dispose of the collected material.

- Wet weather deicing during snow/sleet/freezing rain
 - Conduct deicing/anti-icing procedures at the defined location(s).
 - Utilize alternative preventive measures to minimize excessive amounts of ADF that may be carried into the storm water system.

- Individual Tenant SWPPP
 - Update each SWPPP to include these practices.

- Inspections will be conducted to ensure compliance with these practices.

5.6.2 Runway, Taxiway, and Ramp Deicing (DOA Operations)

- DOA will use the minimum amount of chemicals required for deicing runways, taxiways, and ramps.
- Deicing activities will typically occur during wet-weather conditions.
- Chemicals shall be stored indoors, in containers, on pallets.

5.7 Employee Training Program and Employee Education

Annual training shall be provided to all PPT members and to all DOA and tenant employees who are responsible for implementing or maintaining activities identified in the SWPPP. Instruction and training identified for the initial phase of the pollution prevention training program shall include at a minimum:

- Proper material management and handling practices for specific chemicals, fluids, and other materials used or commonly encountered at the facility
- Spill prevention methods
- The location of materials and equipment necessary for spill clean-up
- Spill clean-up techniques
- Proper spill reporting procedures
- Familiarization with good housekeeping measures, BMPs, and goals of the SWPPP

Expansion and/or modification of the training program may occur as needs are further identified during the implementation of the program.

Note that all training program attendees shall sign in on a dated sign-in log. An agenda, also dated, shall be developed describing the items to be discussed during the training program. All sign-in logs and agendas shall be kept for three years to document implementation of the SWPPP.

All other employees, not participating in the training program, shall be educated on the basic goals of the SWPPP and how to contact the facility's PPT personnel regarding storm water issues. This education program shall be performed annually and within 60 days of the hire date for new employees.

5.8 Periodic Inspections

A two-part inspection process has been developed in response to the storm water permitting requirements. The first component is a quarterly self-inspection conducted by airport tenant or operators performing industrial activity. Assorted checklists contained in *Appendix A*, or modified versions supplied by the tenant that pertain to specific industrial activities, are to be completed by the operator during the inspection process.

PPT personnel perform a second inspection, inherent to the site compliance evaluation process, after the operator's self-inspection has been completed. Copies of the completed self-inspection checklists are reviewed by PPT personnel at this time. An inspection of industrial areas is performed and deficiencies are noted. This inspection is followed by a letter from the Environmental Compliance Division to the tenant or operator describing the inspection results. If necessary, a second inspection is scheduled to review actions taken to resolve SWPPP compliance issues. *Table 5.3* describes the proposed inspection practices and inspection frequencies, and identifies which checklist inspection forms are to be used with each activity category. Checklist completion cycles are also given.

Operator and airport PPT inspectors of industrial areas shall also look for evidence of pollutants entering the airport storm water drainage system serving these areas. This part of the inspection process shall include inspection of areas immediately outside of tenant maintenance facilities for stains or evidence of improper use of uncovered tenant areas, improper disposal, or dumping.

Completed records of inspections shall be maintained as required by the general permit and kept on-site, or referenced elsewhere to document implementation of the SWPPP. These records are reviewed annually during the Comprehensive Site Compliance Evaluation described in *Section 6*. When revisions or additions to the SWPPP are recommended as a result of inspections, a summary description of the proposed changes will be attached to the inspection checklist. The summary must identify any necessary time frames required to implement the proposed changes.

5.8.1 Tenant/Operator Inspections (Self-Inspection of Tenant/Operator Lease Area)

Qualified personnel of the tenant or operator shall inspect designated equipment and facility areas in the operator's leased space where industrial activities are conducted and BMPs have been implemented, in

accordance with the frequencies shown in *Table 5.3*. Self-inspection checklists have been developed to inspect and inventory equipment, material management practices, and industrial areas of the airport identified in this SWPPP. These checklists are contained in *Appendix A*. Checklists 1 & 3 are to be completed by all tenants that perform industrial activities. For the remaining checklists, complete only those that apply to the tenant's work area(s).

Self-inspections shall be performed at specified intervals for the following activities:

- Aircraft, Ground Vehicle, or Equipment Maintenance, Aircraft, Ground Vehicle, or Equipment Washing/Cleaning, Chemical/Material Storage, Training, performed quarterly (*Checklist 1*)
- Fueling (Aircraft, Ground Vehicles, Trucks, Equipment, Storage/Distribution Stations) performed quarterly (*Checklist 2*)
- Industrial Activities (visual wet weather monitoring) performed quarterly (*Checklist 3*)
- Industrial Activities (Dry weather monitoring) performed annually (*Checklist 6*)
- Deicing/Anti-icing performed weekly when deicing activities occur (*Checklist 7*)

5.8.2 Airport Annual Inspections of Tenant/Operator Areas (Conducted in Conjunction with Airport Site Compliance Evaluation Described in *Section 6*)

The site compliance evaluation inspection team consists of, in part, DOA Environmental Staff, and/or DAL Operations Representative, and/or DAL Properties Representative. These inspectors shall be trained and knowledgeable in airport industrial activities, spill prevention control and countermeasure plans, airport storm water drainage system design and maintenance procedures, and storm water pollution prevention strategies.

The evaluation inspection team shall inspect DOA and tenant/operator areas performing the above activities using previously completed checklist forms developed from the tenant/operator self inspection process. Copies of the blank checklists are located in *Appendix A*. The inspection team shall also verify that BMPs identified in this SWPPP are in use. Deficiencies identified by the evaluation inspection visit are to be corrected as soon as practicable, but in no case more than 12 weeks after the conclusion of the site compliance evaluation.

Table 5.3 Inspection Program Timeline at DAL

Quarter	Date Due By (Yearly)	Activity Category	Checklist No.	Inspection Frequency	Inspection Description	Target/Affects
1 (January – March)	April 1	Inspection Program Activities, Visual Monitoring	1,2,3	Quarterly	Tenant facilities, Visual examination of storm water runoff from each outfall Facilities, Visual examination of storm water runoff from each outfall	Tenants
	April 1	Inspection Program Activities, Visual Monitoring	1,2,4,5	Quarterly		DOA
	April 1	Update Spill History Log		Quarterly		DOA and Tenants
	April 1	Annual Deicing/Anti-icing Operation Evaluation		Annually		DOA
	Every Friday as required*	Deicing Activities	7	Weekly	Deicing areas (only during deicing activities) Deicing agent usage form to be turned into DOA after event	DOA and Tenants
2 (April – June)	July 1	Inspection Program Activities, Visual Monitoring	1,2,3	Quarterly	Tenant facilities, Visual examination of storm water runoff from each outfall Facilities, Visual examination of storm water runoff from each outfall	Tenants
	July 1	Inspection Program Activities, Visual Monitoring	1,2,4,5	Quarterly		DOA
	July 1	Update Spill History Log		Quarterly		DOA and Tenants
	July 1	Annual Metals Monitoring		Annually		DOA
3 (July – September)	October 1	Inspection Program Activities, Visual Monitoring	1,2,3	Quarterly	Tenant facilities, Visual examination of storm water runoff from each outfall Facilities, Visual examination of storm water runoff from each outfall	Tenants
	October 1	Inspection Program Activities, Visual Monitoring	1,2,4,5	Quarterly		DOA
	October 1	Update Spill History Log		Quarterly		DOA and Tenants
	October 1	Training Activities		Annually		Employee training program, including spills, BMPs, and recordkeeping
	October 1	Dry Weather Evaluations	6	Annually	Evaluate each outfall for dry weather discharges	DOA and Tenants
	October 1	Non-Storm Water Discharge Assessment and Certification		Once within the Permit term.		DOA

* Deicing activities checklist 7 must be performed weekly during deicing activities

Table 5.3 Inspection Program Timeline at DAL (cont.)

Quarter	Date Due By (Yearly)	Activity Category	Checklist No.	Inspection Frequency	Inspection Description	Target/Affects
4 (October – December)	January 1	Inspection Program Activities, Visual Monitoring	1,2,3	Quarterly	Tenant facilities, Visual examination of storm water runoff from each outfall	Tenants
	January 1	Inspection Program Activities, Visual Monitoring	1,2,4,5	Quarterly	Facilities, Visual examination of storm water runoff from each outfall	DOA
	January 1	Update Spill History Log		Quarterly		DOA and Tenants
	Every Friday as required*	Deicing Activities	7	Weekly	Deicing areas (only during deicing activities) Deicing agent usage form to be turned into DOA after event	DOA and Tenants
	January 1	Comprehensive Site Compliance Evaluation		Annually	DOA storm water structural, pollution prevention, and sediment controls	PPT Members
	January 1	Comprehensive Site Compliance Evaluation		Annually	Visual inspection of spill equipment	PPT Members
	January 1	Annual Report		Annually		PPT Members
	January 1	Revision to the SWPPP		Annually		PPT Members

5.9 Quarterly Visual Monitoring

Section 1.5 defines the Airport drainage basins for DAL. *Exhibit 1* shows the locations of the final permitted outfalls, while *Exhibit 2* and the tenant site maps in *Appendix I* show the direction of flow and locations of potential pollutants within each drainage basin contributing to an outfall.

5.9.1 Regulatory Requirements for Visual Monitoring

Storm water discharges from each outfall authorized by the TPDES MS General Permit must be visually examined and documented on a quarterly basis. Additionally, sampling and testing of storm water discharges for hazardous metals is required on an annual basis. During times that storm water sampling and testing is required, the samples for these testing requirements shall be collected at the same time as quarterly visual inspections are conducted.

The visual inspections of storm water discharges at each outfall must be completed during a qualifying storm event during daylight hours. A qualifying storm event is defined as rainfall of at least 0.1 inches, with no previous storm event having occurred in the previous 72 hours. The 72-hour interval is not required if the preceding storm did not yield a discharge that was sufficient for obtaining a sample. The amount of runoff from 0.1- inch storm event may not be sufficient to generate runoff at all outfalls. Based on soil conditions, a rainfall of 0.3 to 0.5 inches may be necessary to generate a representative flow. Data on rainfall amounts, start of event, and overall precipitation throughout the duration of the event can usually be obtained from local weather representatives.

Quarterly visual monitoring shall be documented on *Checklist 3* for the tenants and *Checklist 4* for the DOA and must include the date and time samples were collected and examined, names of personnel that collected and examined the samples, the nature of the discharge (e.g., runoff, snow melt), and the visual quality of the storm water discharge. If storm water samples are tested for hazardous metals, results of the laboratory analyses shall be included with the checklist.

Visual inspections shall be made within the first 30 minutes after the beginning of storm water flow through the outfalls. If it is not practicable to take the sample, or to complete the sampling, within the first 30 minutes, sampling must be completed within the first hour of discharge. If inspections and/or

sampling are not completed within the first 30 minutes of discharge, the reason must be documented or attached to the Checklist. As a minimum, observations shall include:

- Color
- Odor
- Clarity
- Floating solids
- Settled solids
- Suspended solids
- Foam
- Oil sheen
- Any obvious indications of contamination or pollution

The following conditions shall be recorded on a quarterly inspection form, if they occur:

- Lack of a qualifying storm event during a calendar quarter
- Inability to conduct visual observations due to a facility shut-down
- Inability to conduct visual observations because storm event begins after dark
- Inability to conduct visual observations because of lack of sufficient flow
- Inability to conduct visual observations because of adverse weather conditions

All observations of outfall flow and visual examinations must be conducted in a well-lit area. Documented results must be retained. Results of the examination shall be reviewed by the PPT during the Comprehensive Site Compliance Evaluation. The PPT must investigate and identify probable sources of any observed storm water contamination. The SWPPP shall be modified as necessary to address the conclusions of the PPT.

The tenants shall conduct quarterly wet weather visual monitoring from designated Storm Water Monitoring Locations (SWML) identified on their site map.

Table 5.5 Tenant Storm Water Monitoring Locations

<u>Tenant</u>	<u>SWML Number</u>	<u>Waiver (Yes, Date/No)</u>
Southwest Airlines	SWML #25, #26, #27, #28, #29	
Continental	SWML #12	Yes, 03/12/2009
Gulfstream	SWML #14, #15, #17	
Signature Flight Support	SWML #22, #24	Yes, 02/26/2009
Associated Air Center	SWML #6, 6A, 6B	
Jet Aviation	SWML #18, #18 IF1, #18 IF2	
Airnet	SWML #2	
Sky Tanking	SWML #4, #13	
Pinnacle	SWML #10	
Bombardier	SWML #1	
Business Jet Center	SWML #8, #9	
Dean Foods	SWML #13	
Holly Corp.	SWML #16,	
Trinity Industries	SWML #3	
Vitesse	SWML #29	Yes, 04/09/2009
Landmark Aviation	SWML # 7, #7A	
Dean Foods	SWML # 13, # 30	

5.9.2 Representative Discharges from Substantially Similar Outfalls

The characteristics of storm water discharge at Outfall No. 1, No. 7, No. 9, No. 12, No. 14, No. 15, No. 17, and No. 19 (Drainage Basins A, G, L, N, O, and S, respectively) should be substantially similar. These six drainage basins consist primarily of parking lots and roads, and have no exposed potential industrial pollutants within them. Therefore, quarterly visual monitoring and annual hazardous metals sampling does not need to be conducted at these outfalls.

The characteristics of storm water discharge at Outfall No. 3, No. 5, No. 6, and No. 8 (Drainage Basins C, E, F, H, and Q, respectively) should be substantially similar. Since all five of these drainage basins collect storm water runoff from portions of the runway system, the types of potential pollutants in the runoff should be similar. Quarterly visual monitoring and annual hazardous metals sampling shall be conducted at Outfall No. 5, and the results shall be reported as representative of the discharge from the substantially similar outfalls (Outfall No.3, No. 6, and No. 8).

The characteristics of storm water discharge at Outfall No. 11 and No. 18 (Drainage Basins K and R, respectively) should be substantially similar. Both of these drainage basins collect storm water runoff from aircraft and equipment maintenance areas and outdoor aircraft washing areas; therefore, the types of potential pollutants in the runoff should be similar. Quarterly visual monitoring and annual hazardous metals sampling shall be conducted at Outfall No. 18, and the results shall be reported as representative of the discharge from Outfall No. 11

Sheetflow runoff occurs in areas having no discernible discrete discharge point. Although DAL has multiple locations of vacant land and parking lots, these locations of sheetflow all drain to discernable collection systems and designated outfalls.

5.10 Recordkeeping and Internal Reporting Procedures

The recordkeeping and reporting procedures described in this document shall be followed during the implementation of the SWPPP. All blank forms described in this document are kept in *Appendix A*. All completed forms and records are to be kept on site.

- Deicing/Anti-icing Agent Usage forms to be used by DOA operators, if necessary (*Appendix A*)
- Blank Inspection forms to be used by tenants/operators and DOA (*Appendix A*)
- Spill Notification Procedures to be used by tenants/operators and DOA (*Airport Emergency Plan*)
- Training Records (shall include agenda and sign-in sheet)
- Certifications (*Appendix G*)
- Site Compliance Evaluation records

These records and forms are incorporated as a part of this SWPPP.

5.11 Structural Controls

Structural controls control the volume and peak discharge rate and/or reduce the pollutant concentration of storm water runoff. Vegetative practices act as nature's bio-filters to reduce storm water flows and pollution. Vegetative buffer filters located along the edges of the runways and taxiways are part of the airport drainage system and enhance the quality of the storm water. Storm water enters the vegetative buffer filter in a thin, sheet flow to maximize infiltration, filtration, and biological uptake of pollutants by the vegetation. After flowing through the grassy areas, in most cases, the runoff from the runways and most taxiways flows across fields of grasses sloping toward storm water inlets, thereby reducing the runoff velocity and potential for erosion.

In addition to the vegetative buffers on the airport, several tenants have structural controls to prevent contaminants from entering the storm sewer system. Business Jet Center, Vitesse, and Dalfort Aerospace have systems that collect and properly dispose of spent wash water. MLT Development has a detention basin with a shut off valve that can be used in case of a fuel spill. Signature Flight Support has a 3,000 gallon clarifier near its fuel farm that can collect a fuel spill to prevent it from entering the storm sewer system. Southwest Airlines has a shut off valve at its fuel farm that can contain any spills that would occur within the curbed area. In addition, many materials stored covered or inside a structure are placed on pallets or shelves to inhibit corrosion or moisture build-up.

To prevent any catastrophic spills from leaving the airport property there are ten outfall closure devices installed in the various drainage basins that would collect from areas where there is the highest probability of a large fuel spill. The outfall closure devices consist of electrical slide gates and 900-5000 gallon stormceptors. The slide gates can be closed remotely from a fueling location with the push of a button, or remotely from the operations tower, or at the site of the gate itself in the event of a large fuel spill. The stormceptors would act as a large catch basin as it would hold a specified amount of fuel in the event of a spill and it could later be pumped out. Stormceptors also filter out up to 98% of suspended solids that flow through the drain from a rain event. There is a 8x8 ft box with a slide gate located in Drainage Basin D that will close off outfall 4. There is a 6x6 ft box with a slide gate located in Drainage Basin B that will close off outfall 2. There is one 8x8 box, two 10x10 boxes with slide gates and two 900 gallon stormceptors located in Drainage Basin R, these will prevent a spill from entering a main drainage ditch, and outfall 18. There is a 4800 gallon and a 5000 gallon stormceptor and an 8x8 box with a slide gate in Drainage Basin P that that will close off outfall 16. There is an 8x8 box with a slide gate in Drainage Basin M that will close off outfall 10.

The quarterly inspection process of structural controls will identify the status of the controls and evaluate their maintenance needs. Maintenance shall then be performed on the structural controls on an as-needed basis.

5.12 Velocity Dissipation Devices

The existing control measures for runoff control at DAL consist primarily of grass-lined ditches and swales. Grass lining of ditches or swales decreases the velocity of storm water runoff, resulting in less erosion and promotes the settling of larger particles. This settling reduces the suspended solid loads and biochemical oxygen demand. The majority of the runoff conveyed from the taxiway and runway areas flow in grass-lined ditches and eventually reaches either Bachman Lake or Knight's Branch.