Report

# Storm Water Pollution Prevention Plan

Project I.D.: 19D001.04
Activity I.D.: 005-2019-001

## The Des Moines International Airport
## Des Moines, Iowa

February 2020

DES MOINES
International Airport

# Storm Water Pollution Prevention Plan

## The Des Moines International Airport
## Des Moines, Iowa

### Distribution

| No. of Copies | Sent To |
|---|---|
| 1 | The Des Moines Airport Authority<br>5800 Fleur Drive<br>Des Moines, IA 50312 |

# Storm Water Pollution Prevention Plan

Project ID: 19D001.04
Activity ID: 005-2019-001

Prepared for
The Des Moines International Airport
Des Moines, Iowa

Prepared by
Foth Infrastructure & Environment, LLC

February 2020


8191 Birchwood Court • Johnston, IA 50131 • (515) 254-1393

# Storm Water Pollution Prevention Plan

# The Des Moines International Airport
# Des Moines, Iowa

## Contents

## Tables



## Figures



## Appendices

# List of Abbreviations, Acronyms, and Symbols

| | |
|---|---|
| AOA | Air Operations Area |
| AST | Aboveground Storage Tank |
| BTEX | Benzene, Toluene, Ethylbenzene, Xylenes |
| BMP | Best Management Practices |
| CBOD | Carbonaceous Biochemical Oxygen Demand |
| CWA | Clean Water Act |
| DMAA | Des Moines Airport Authority |
| DNR | Iowa Department of Natural Resources |
| DO | Dissolved Oxygen |
| FAA | Federal Aviation Administration |
| EPA | United States Environmental Protection Agency |
| FBO | Fixed Base Operator |
| FDSM | Fly Des Moines |
| Foth | Foth Infrastructure & Environment, LLC |
| IAC | Iowa Administrative Code |
| NPDES | National Pollutant Discharge Elimination System |
| SIC | Standard Industrial Classification |
| SPCC | Spill Prevention Control and Countermeasures |
| SWPPP | Storm Water Pollution Prevention Plan |
| TSS | Total Suspended Solids |
| WRA | Wastewater Reclamation Authority |

# 1 Introduction

## 1.1 Regulatory Background

### 1.1.1 Federal Requirements

In 1972, the Federal Water Pollution Control Act, also known as the Clean Water Act (CWA), was enacted requiring that discharges of pollutants to waters of the United States from any point source be covered by a National Pollutant Discharge Elimination System (NPDES) permit. In 1987, amendments to the CWA required the United States Environmental Protection Agency (EPA) to develop a framework for regulating storm water discharges from municipal and industrial activities under the NPDES program. Storm water is defined as precipitation runoff, surface runoff and drainage, street runoff, and snow melt runoff. The intent of the storm water regulation was to improve water quality by reducing or eliminating contaminants in storm water.

In 1990, the EPA issued final regulations for storm water discharges from municipal and industrial activities. The regulation included discharges from eleven categories of industrial activities. Category eight included transportation facilities with Standard Industrial Classifications (SIC) within Major Group 45 (Transportation by Air) which have activities involved in vehicle maintenance (including vehicle rehabilitation mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, or airport deicing operations. As a result, airports with operations involving these activities were required to develop a Storm Water Pollution Prevention Plan (SWPPP) and apply for coverage under a NPDES permit.

### 1.1.2 State Requirements

Since 1978, the Iowa Department of Natural Resources (DNR) has been delegated authority to administer the federal NPDES wastewater (point source) discharge permit program. Since Iowa retained authority to administer the wastewater program, authority to administer the storm water discharge permit program was also requested. In August 1992, the DNR received authorization from EPA to issue general permits for storm water discharges. DNR continues issuing NPDES permits for all storm water discharges subject to the federal permit requirements.

Pursuant to the authority of Section 402(b) of the CWA, Iowa Code Section 455B.174 and rule 567-64.13 of the Iowa Administrative Code (IAC), the DNR issued Permit No. 77-27-0-08 to The Des Moines Airport Authority (DMAA) and co-permittees on May 1, 2017. The permit expires on April 30, 2022. A copy of the NPDES permit is provided in Appendix A.

Discharges authorized by the NPDES permit consist of storm water discharges associated with industrial activity from vehicle maintenance areas, equipment cleaning areas, deicing/anti-icing areas, and any other areas where activities take place which could introduce pollutants into storm water and be discharged through Outfalls 001, 002, and 003. No other storm water discharges associated with industrial activity are covered by the NPDES permit. Amendment of the permit is required for any additional storm water discharges associated with an industrial activity.

Airport tenants or operators with activities associated with commercial air transportation are co-permittees and share responsibility for compliance with permit conditions on portions of the

airport where they conduct operations. In addition, tenants conducting commercial or industrial activities not related to commercial air transportation but associated with storm water discharges also share responsibility for compliance with permit conditions on portions of the airport where they conduct operations. DMAA maintains responsibility for coordinating efforts with co-permittees to achieve permit compliance. In accordance with Part I.A.4 of the NPDES permit, DMAA is responsible for notifying the DNR of any changes in co-permittee status or conditions that may require a co-permittee to obtain coverage under a separate individual NPDES permit. A listing of co-permittees is provided in Appendix B.

# 2 Facility Information

## 2.1 General Information

Facility Owner: The Des Moines International Airport
5800 Fleur Drive
Des Moines, IA 50321-2854

Facility Operator: The Des Moines International Airport - Des Moines Airport Authority
5800 Fleur Drive
Des Moines, IA 50321-2854

Facility Contact(s): Bryan Belt, Director of Engineering
Cole Steffes, Project Engineer
(515) 256-5160

SIC: 4581 (Airports, Flying Fields, and Airport Terminal Services)

Permit Information: Iowa NPDES Permit No. 77-27-0-08 (expires April 30, 2022)
EPA No. IA0075931

Outfalls: 001, 002, 003

Receiving Water(s): Yeader Creek
Frink Creek
Middle Creek

The site location and layout maps are provided as Figures 1- 3.

## 2.2 Land Use Activities

The Des Moines International Airport is a commercial service airport located within the City of Des Moines at the physical address of 5800 Fleur Drive. The facility consists of approximately 2,625 acres of land situated west of Fleur Drive, south of McKinley Avenue, and north of Army Post Road. Surrounding property uses to the east and north are primarily residential and commercial. The property uses to the west and south consist of farmland, sparse residential and commercial.

The primary SIC for the airport is 4581 (Airports, Flying Fields, and Airport Terminal Services). Activities performed by the airport and its tenants primarily include a variety of operations associated with commercial passenger service, air cargo, and general aviation services. Industrial activities with potential to impact storm water include aircraft deicing and anti-icing activities; vehicle and aircraft maintenance, washing, and fueling; equipment degreasing, cleaning, and maintenance; fuel and chemical storage; and building and ground maintenance.

## 2.3 Drainage System

Five watersheds are included on the airport property and were identified during assessment of the facility property (see Figure 3). Industrial activities are conducted within three of these drainage areas. Storm water monitoring is conducted at Outfalls 001, 002, and 003, to evaluate compliance with the conditions established in the NPDES permit (Appendix A). The size of each drainage area, amount of impervious surface, and receiving waters is presented in Table 2-1. Characteristics of each drainage area are described in the following paragraphs.

Table 2-1
Storm Water Drainage Areas

| Outfall | Area (acres) | Impervious Surface % | Receiving Water |
|---|---|---|---|
| 001* | 320.1 | 53.6% | Yeader Creek |
| 002* | 1,786.1 | 13.7% | Frink Creek |
| 003* | 259.9 | 20.3% | Middle Creek (Little Basin) |
| 004 | 24.0 | 17.2% | Southern Hills Basin |
| 005 | 63.0 | 0.1% | Highland Hills Basin |
| 006A 006B | 77.6 | 0.0% | Echo Valley Basin |

* Permit required monitoring location.

### 2.3.1 Outfall 001 Yeader Creek

The Yeader Creek Basin encompasses most of the commercial passenger airline operations around the terminal as well as corporate hangar services, Elliott Aviation and East Signature Flight Support fixed-base operators (FBOs), the terminal and concourse areas, and numerous automobile parking areas.

Drainage Patterns:
Storm water drainage from this area is directed through underground conveyance that drains ultimately to Yeader Creek, located just east of Fleur Drive, north of Fleur Drive Car Wash and south of Quality Inn & Suites Des Moines Airport. This outfall is the headwaters of Yeader Creek. Drainage flows through a box culvert underneath Fleur Drive and flows over riprap and a weir drop structure. The banks of this outfall area are armored with riprap and volunteer vegetation. Drainage from this outfall is dispersed through rip rap installed in the substrate and a concrete weir drop structure that dissipates energy during flow to reduce erosion.

### 2.3.2 Outfall 002 Frink Creek

The Frink Creek Basin includes the western half of the airport property. Included in this area is the Iowa Air National Guard Base, the South Air Cargo apron used by UPS, FedEx, and the T-Hangars, and UPS Business Center. Activities at these facilities are described later in this report.

Storm water drainage from the South Cargo apron is directed via storm drains to the northwest side of the airport property where it drains to Frink Creek during non-winter months. During the deicing/anti-icing season, runoff from the south air cargo apron is diverted either to the stormwater detention facility located north of the air carrier terminal building, or to stormwater detention tanks located along the north edge of the cargo apron. Stormwater from the Iowa Air National Guard (IANG) Base also drains to the southwest under Runway 13/31 and northwest toward Frink Creek. Frink Creek is a tributary to the Raccoon River, which ultimately enters the Des Moines River. This outfall location has vegetative growth on the banks, protecting from stormwater erosion. Drainage flows through naturally formed channels and a corrugated drainage pipe underneath 42nd Street.

### 2.3.3 Outfall 003 Middle Creek

Land use in the area surrounding Outfall 003 includes DMAA maintenance department, consolidated fuel farm, UPS, Rental Car facility, Mesaba maintenance hangar and Fly Des Moines (FDSM) maintain facilities are located within the Middle Creek Basin.

Airport storm water drainage into the Middle Creek Basin is to the south through a detention pond, beneath Army Post Road and ultimately into Middle Creek. Drainage flows from a culvert located just south of the airport gate and flows south through a wooded drainage area. a newly constructed catchment basin located just north of Army Post Road intercepts storm water drainage and detains water. The drainage flow is then directed through a box culvert and concrete catchment basin and ultimately through a culvert underneath Army Post Road.

### 2.3.4 Outfall 004 Southern Hills Basin

Land use surrounding the area in the Southern Hills watershed basin is predominated by the Iowa Air National Guard (IANG) campus.

Airport drainage from this watershed area drains out of a culvert south of McKinley Avenue and is dispersed into a concrete apron that is dispersed into grass and a gravel access road. Continuous drainage does not occur from this outlet and storm water is conveyed into the grass area and contained within the airport grounds.

### 2.3.5 Outfall 005 Highland Hills Basin

Land was acquired for the Runway 31 protection zone located in the southeast of Fleur Drive and Army Post Road intersection. This area is the only land owned by the airport that is included in the Highland Hills basin watershed.

The majority of this area is open space covered by grass and other vegetation. Only 0.1% of the land has impervious surfaces. The land slopes to the southeast and there is a small drainage feature draining to the south. This feature is naturally occurring and the banks are covered with vegetation

### 2.3.6 Outfall 006A and 006B Echo Valley Basin

Area within the Echo Valley Basin watershed includes two small areas that were acquired during the extension of Runway 5 projects. These parcels are located on the northeast corner of Army Post Road and SW 42nd St (006A) and land located west of Highway 28 near Army Post Road intersection (006B).

These two areas have no impervious surfaces and land use includes vegetated open space and farming. Outfall 006A is a low-lying area near Army Post Road that conveys storm water through a culvert under Army Post Road. Outfall 006B is a low-lying area located north of Highway 5 where a farm field drains through a culvert south underneath Highway 5.

## 2.4 Storm Water Pollution Prevention Team

The SWPPP team members and their areas of responsibility are presented on the following table.

Table 2-2
SWPPP Team Members and Responsibilities

| Team Member | Title | Phone Number | Responsibilities |
|---|---|---|---|
| Bryan Belt | Director of Engineering | (515) 897-9724 | Signatory authority; authorizes the coordination of all stages of storm water plan development and implementation, the employee training program, the keeping of all records and ensures that all reports are submitted. |
| Cole Steffes | Project Engineer | (515) 256-5858 | Responsible for implementation and oversight of Best Management Practices (BMPs) and storm water sampling; coordinates inspections and conducts training, maintains records and reports; notes any operational or process changes; coordinates maintenance activities and spill response team, and communicates on related issues with Airport tenants. |
| Airport Staff and Tenants | Co-Permitees | (See Table 2-3) | Responsible for maintenance of BMPs; reporting operational or process changes; participates in training, inspections; and spill response efforts; provides recommendations for storm water pollution prevention measures. |

## Table 2-3
## SWPPP Pollution Prevention Team Members

| Facility | Phone Number | Contact Person |
|---|---|---|
| Des Moines Airport Authority | 515-256-5160 | Bryan Belt |
| Allegiant Airlines | 515-991-6715 | MiMi Thongsoum |
| American Airlines | 515-256-5165 | Sue Massey |
| Delta | 515-256-5764 | Jim Grabill |
| Frontier | 515-256-5379 | Michael Hammer |
| Southwest | 515-256-5630 | Sally Housholder |
| United Airlines | 515-256-5200 | Dustin Power |
| Des Moines Flying Service | 515-256-5305 | Josh Boyd |
| FDSM – Des Moines Airport Traffic Control Tower | 515-974-8011 | Johnny Houston |
| FDSM – Des Moines Airport Surveillance Radar | 515-974-8011 | Johnny Houston |
| FDSM - Runway 31 ALSF | 515-974-8011 | Johnny Houston |
| FDSM – Runway 31 Glideslope | 515-974-8011 | Johnny Houston |
| FDSM – Runway 31 Localizer | 515-974-8011 | Johnny Houston |
| FDSM – Remote Transmitter/Receiver | 515-974-8011 | Johnny Houston |
| Elliott Aviation | 515-285-6551 | Denny Brown |
| Federal Express | 515-256-5975 | Teresa Valenta |
| United Parcel Service | 502-329-3913 | Shane Seely |
| Meredith Corporation Aviation Dept. | 515-282-2252 | Ryan Campbell |
| Endeavor Air | 515-953-7911 | Dewayne Keating |
| Signature Flight Support | 515-256-5330 | Sean Kuhl |
| Principal Financial Group Aviation Dept. | 515-256-5433 | Daryl Bartek |
| Avis | 515-256-5959 | Sterling Shadd |
| Budget | 515-256-5959 | Sterling Shadd |
| Dollar | 515-256-5862 | Robert Clubine |
| Enterprise/National/Alamo | 515-256-5665 | David Ryan |
| Hertz | 515-256-5904 | Robert Clubine |

# 3 Description of Potential Pollutant Sources

A variety of routine airport activities occur on the leaseholds of DMAA. Many of these activities present the potential for storm water pollutants to be discharged into the storm water system. The activities conducted at DMAA having the greatest potential of contributing to storm water pollution are:

- Aircraft, runway, ground vehicle, and equipment maintenance and cleaning
- Aircraft and ground vehicle fueling
- Aircraft and runway deicing/anti-icing operations
- Outdoor storage activities
- Loading and unloading operations
- Onsite waste disposal

A description of the nature of these activities is presented below. Pollutants potentially present in stormwater discharges as a result of tenant activities were identified based on the tenant questionnaires and the site visits. The potential pollutants may consist of petroleum products (such as fuels, oils, and greases), deicing fluids (ethylene glycol, propylene glycol and potassium acetate), solid deicing compounds (sodium acetate and sand mixed with 10% sodium chloride), halogenated and non- halogenated solvents, soap, pesticides and herbicides, metals (cadmium, chromium, and nickel), paint, aqueous film forming foam (AFFF) and acid wastes. These pollutants can be transported to the stormwater system either as direct spills, rainfall runoff, or surface area wash downs mobilizing residual contaminants. Industrial activities conducted at the airport with significant potential to impact storm water are presented in Table 3-1. Pollutant and indicator parameters for each source/activity are also provided.

## 3.1 Aircraft, Runway, Ground Vehicle, and Equipment Maintenance and Cleaning

Aircraft, ground vehicles, and/or equipment are maintained by the majority of industrial tenants at DMAA. Some tenants maintain aircraft, vehicles and/or equipment at their facility, either directly or through a contracted service provider. Tenants perform these activities both indoors and outdoors.

Because lubricating oils, hydraulic oils, degreasers, and miscellaneous cleaning products are commonly used during maintenance activities, small leaks or spills may occur. Tenants typically respond to these leaks and spills by using a variety of methods, including the use of absorbent pads, dry absorbent materials, rags or mops.

## 3.2 Floor Drains

Some tenants have floor drains which are located in maintenance and hangar areas. Discharges resulting from some maintenance activities may run to either the ground, storm drain, or sanitary sewer if left uncontained. Because the potential for pollutant discharge to storm drains from floor drains or spills mixing with stormwater runoff, maintenance activities appear to present a moderate potential for significant stormwater pollutant discharge.

Equipment degreasing and equipment and ground vehicle washing activities are also performed by some tenants and DMAA maintenance. The tenants and DMAA maintenance conduct equipment degreasing indoors and equipment and vehicle washing occurs both indoors and outdoors. The drains from the wash bay locations drain to the sanitary sewer system.

## 3.3 Aircraft and Runway Anti-icing/Deicing Operations

Deicing and anti-icing chemicals are generally used on aircraft and ground surfaces to eliminate or prevent ice build-up during winter weather conditions.

Runoff from the air carrier and southwest quarter of the south air cargo aprons is directed toward a 3.8 million gallon underground stormwater detention facility located immediately north of the air carrier apron. Runoff from the remaining south cargo apron is directed toward a combined one million gallon underground detention facility located north of the south cargo apron. Runoff from the glycol storage area is directed to two 10,000-gallon underground tanks. These systems are designed to capture glycol-contaminated runoff during the deicing/anti-icing season in this underground facility, where it is periodically discharged to the Des Moines Metropolitan Wastewater Reclamation Authority (WRA) in accordance with wastewater Discharge permit No. A10016 (See Appendix A) for treatment. During non-winter months runoff from these aprons enters the stormwater systems of their respective drainage basin.

Per NPDES permit #77-27-0-08, periodic sampling of water from specified points along the outfalls of the appropriate basin is conducted with reporting of the test results forwarded to the Iowa Department of Natural Resources on a monthly basis. NPDES outfalls are shown on Figure 3.

## 3.4 Aircraft Deicing/ Anti-icing

Aircraft deicing/anti-icing is performed at or near the passenger gates on concourses A and C of the air carrier apron and at the South Cargo area apron. Aircraft deicing/anti-icing is not allowed on the IANG apron and the Elliott Aviation apron. Also, aircraft utilizing the Signature Flight Support and East Cargo aprons perform these operations on the areas east of gate C6 and south of gate A5, respectively, as directed. Aircraft deicing/anti-icing is not allowed at any other areas of the Airport. Figure 4 summarizes locations of aircraft deicing operations at DMAA.

The deicing materials used by tenants at DMAA consist of ethylene glycol and/or propylene glycol. The deicing chemicals are typically stored in bulk quantities and is generally applied by spraying the aircraft with a mixture of hot water and a glycol-based fluid. Once applied, a portion of the deicer may drip from the aircraft and fall to the ground.

The Airport Authority maintains records of the type (including Material Safety Data Sheets) and monthly estimated quantities and total annual quantities of deicing/anti-icing chemicals used.

## 3.5 Airfield Deicing

The Airport Authority is responsible for deicing/anti-icing runways and other land and airside ground surfaces except at the Iowa ANG base. The Airport Authority applies potassium acetate and sodium acetate as its deicing agent to airside ground surfaces. Potassium acetate and sodium acetate have the lowest environmental impact of all of the available options. In addition to potassium acetate and sodium acetate, sand is occasionally applied to airside ground surfaces to increase traction. Mechanical pavement brushers are used to remove snow and ice from the terminal and runway areas. During the winter months snow is stockpiled in designated areas so that when melting occurs the drainage from the meltwaters is directed to the storage tanks that are directed to the sanitary sewer system.

On landside ground surfaces, sand mixed with 10% salt (sodium chloride) is applied to promote melting of frozen precipitation.

## 3.6 Outdoor Storage Areas

A large variety of chemicals and petroleum products (i.e. gasoline, diesel and jet fuels) are stored by tenants at DMAA. Many tenants have indoor and outdoor storage areas. Chemicals, oils, and waste oils are typically stored in 55-gallon drums or smaller containers; fuels and deicing fluid are typically stored in underground or aboveground storage tanks. Other materials such as cleansers, paints and paint-related products are stored in small containers indoors.

## 3.7 Fuel Farms

Fuel farms or individual aboveground and underground tanks are located at numerous facilities on airport property. Figure 2 identifies the location and contents of aboveground and underground fuel storage tanks at DMAA. Fueling can be performed from transfer trucks or directly from a pump system. All delivery trucks and pump locations are equipped with spill kits.

Aircraft fueling activities are conducted on paved surfaces such as the concrete aprons around the air carrier terminal gates and at the South and East Cargo areas. The two FBOs, Signature Flight Support and Elliott Aviation, provide fueling services to most tenants. Elliott Jet Center provides fueling services to corporate and transient aircraft. Meredith Corporation

and Principal Mutual Insurance fuel their own aircraft from fuel facilities located on their leaseholds. The IANG is also responsible for its own fueling services. Vehicle and ground support equipment fueling is typically conducted at the East Cargo apron, South Cargo apron, Rental Car facility and Airport Authority Field Maintenance area using airport-owned facilities.

The Airport Authority is responsible for four fuel farms and associated pumps noted above (see Figure 2) for vehicle fueling with diesel and ethanol blended gasoline. All three facilities drain to the storm drain system.

## 3.8 Chemical Storage Areas

Chemicals including waste oils and miscellaneous cleaning products were identified in many areas of the airport, particularly at ground support equipment storage areas. Most of these materials are stored within buildings and are not exposed to stormwater.

Glycol storage tanks and waste fuel/oil storage tanks exposed to stormwater. The glycol storage area located near the passenger terminal drains to the underground storage basin system that is directed to the sanitary sewer system. Waste oil tanks have secondary containment measures.

## 3.9 Loading and Unloading Operations

Materials that tenants use within their operations and involve loading and unloading include ethylene and propylene glycol, waste oils and/or fuel, chemicals, aircraft fuel, automotive and aircraft fluids, lavatory chemicals and sanitary waste, and solid municipal waste.

Airport Authority's operations include the loading and unloading of vehicle fuel, pavement deicing/anti-icing materials, waste fuel and/or oil, chemicals, automotive fluids and solid municipal waste.

## 3.10 On-Site Waste Disposal

Sanitary wastes from aircraft are pumped by air carriers and FBO's from the aircraft into a lavatory tanker vehicle. The wastes are pumped into an Airport Authority-provided common use indoor sanitary disposal area located at the intersection of the 'A' and 'C' concourses, apron level.

Domestic solid wastes are stored in covered dumpsters at various outdoor locations on the Airport. These dumpsters are provided by the Airport Authority and City of Des Moines waste disposal vehicles empty these dumpsters on a scheduled basis. In addition, the Airport Authority is responsible for the solid waste dumpsters positioned around the terminal building and concourses.

Waste oil and/or fuel, automotive fluids, solvents, chemicals and other special waste materials are routinely removed on a regular schedule by approved waste handling vendors.

Table 3-1
Potential Pollutant Sources

| Activity | Location(s) | Pollutant/Indicator Parameters |
|---|---|---|
| Aircraft Deicing/Anti-Icing | Drainage Area 1 – Passenger Terminal Apron<br>Drainage Area 2 – Air Cargo Apron | Propylene Glycol, Ethylene Glycol, CBOD, DO |
| Aircraft Deicing Fluid Storage | Drainage Area 1 – Passenger Terminal Apron<br>Drainage Area 3 – Facilities Operations | Propylene Glycol, Ethylene Glycol, CBOD, DO |
| Fuel/Oil Storage | Drainage Area 1 – Passenger Terminal Apron<br>Drainage Area 2 – Iowa ANG<br>Drainage Area 3 – Facilities Operations | Oil & Grease, BTEX |
| Aircraft Fueling | Drainage Area 1 – Passenger Terminal Apron | Oil & Grease, BTEX |
| Aircraft Cleaning | Drainage Area 2 – Air Cargo Apron | Oil & Grease, TSS |
| Vehicle/Equipment Fueling | Drainage Area 1 – Passenger Terminal Apron<br>Drainage Area 2 – Airfield Maintenance,<br>Drainage Area 3 – Rental Car Facility | Oil & Grease, BTEX |

BTEX = benzene, toluene, ethylbenzene, xylenes
CBOD = carbonaceous biochemical oxygen demand
DO = dissolved oxygen
TSS = total suspended solids

## 3.11 Inventory of Exposed Materials

Materials that have been treated, stored, used, or disposed in a manner to allow exposure to storm water during the past three years, and industrial activities that may contribute contaminants to storm runoff, are discussed below. Information regarding the method of management and storm water control measures is provided in Table 3-2. Further information describing the storage location, method(s) of management to reduce exposure to storm water, and control measures is provided in the following paragraphs.

### 3.11.1 Drainage Area 1 – Yeader Creek

This area is located on the easternmost side of the airport property and includes the passenger terminal, short-term and long-term parking, maintenance facilities, detention pond and glycol storage areas. The majority of the de-icing and re-fueling operations occurs within the area of Outfall 1. Maintenance activities during the winter months include snow/ice removal and application of sand and salt to the roadways and parking lots in the passenger terminal area. Snow storage areas are designated within this area to contain snow removal. These designated areas drain to glycol containment storage basins which are discharged to the WRA. Discharge is conducted in accordance with Wastewater Discharge Permit No. A10016 issued on June 1, 2019. The permit expires on June 1, 2023. A copy of the permit is provided in Appendix A. The aboveground storage tanks (ASTs) within this drainage area are for glycol storage and are located within the drainage containment system, which does not drain to the storm sewer system.

### 3.11.2 Drainage Area 2 – Frink Creek

Significant materials within this area consist of fuel and deicing fluid. These materials are stored at different locations including Iowa Air-National Guard (IANG), facilities operations, Fed-Ex and cargo apron.

Ground support vehicles are fueled at two dispenser pumps located on the south side near the facilities maintenance operations. The dispenser area concrete pad slopes toward trench drains that route storm water to an oil/water separator system. Discharge of the treated storm water from the oil/water separator is to the adjacent drainage ditch. Facilities maintenance operations stores used oil in an AST. Other materials are stored indoors with concrete floors and drains with oil/water separator systems.

### 3.11.3 Drainage Area 3 – Middle Creek

Significant materials stored or used within this area consist of diesel fuel and deicer material. Aircraft fueling and deicing operations are performed on the cargo apron. Storm water runoff from this area is collected into the stormwater detention basin system and diverted to the WRA in the winter months.

The Rental Car Facility is located on the east side of 18$^{th}$ Street SW. Vehicle washing activities are conducted inside the enclosed wash bay and vehicle servicing is conducted inside the maintenance bays.

## Table 3-2
## Inventory of Exposed Materials

| Drainage Area | Description | Period of Exposure | Quantity (gallons) | Method of Storage | Structural or Non-Structural Control Measures |
|---|---|---|---|---|---|
| 1 | Road Salt and Sand | On-going | Varies | Application Vehicles | Stored in enclosed shed/Restricted use |
| | Lawn Care Products | On-going | Varies | Application Vehicles | Restricted use |
| | Glycol Deicer Type 1 | On-going | 6,000 | 6,000 AST | Double-walled within containment zone |
| | Glycol Deicer Type 1 | On-going | 9,200 | 9,200 AST | Double-walled within containment zone |
| | Glycol Deicer Type 1 | On-going | 4,600 | 4,600 AST | Double-walled within containment zone |
| | Glycol Deicer Type 1 | On-going | 10,000 | 10,000 AST | Double-walled within containment zone |
| | Glycol Deicer Type 4 | On-going | 1,600 | 1,600 AST | Double-walled within containment zone |
| | Glycol Deicer Type 4 | On-going | 6,000 | 6,000 AST | Double-walled within containment zone |
| | Glycol Deicer Type 4 | On-going | 1,440 | 6 x 240 Gal. Totes | Double-walled within containment zone |
| | Glycol Deicer | On-going | Varies | ASTs, Totes, and Application Vehicles | Restricted Use/Storage Containment/Collection System and Basin |
| 2 | Road Salt and Sand | On-going | Varies | Application Vehicles | Stored in enclosed shed/Restricted use |
| | Lawn Care Products | On-going | Varies | Application Vehicles | Restricted use |
| | AFFF (Fire station) | On-going | 1,000 | 1,000 mobile AST | Double-walled with oil/water separator system |
| | Diesel Fuel (IANG) | On-going | 300 | 300 AST | Double-walled with oil/water separator system |
| | JP8 (IANG) | On-going | 212,300 | 300; 210,000; 2,000 AST | Double-walled with oil/water separator system |
| | JP8 (IANG) | On-going | 3,100 | Variable mobile AST | Double-walled with oil/water separator system |
| | LOX (IANG) | On-going | 6,000 | 2 x 3,000 AST | Double-walled with oil/water separator system |
| | LIN (IANG) | On-going | 4,000 | 2 x 2,000 AST | Double-walled with oil/water separator system |
| | E36 (IANG) | On-going | 4,800 | 4 x 1,200 AST | Double-walled with oil/water separator system |
| | DF2 (IANG) | On-going | 500 | 300; 200 AST | Double-walled with oil/water separator system |
| | AC Deicer (IANG) | On-going | 2,400 | 2 x 1,200 AST | Double-walled with oil/water separator system |
| | Used Oil (IANG) | On-going | 2,240 | Variable ASTs | Double-walled with oil/water separator system |
| | Potassium Acetate Deicer | On-going | 10,000 | 1 – 10,000 AST (Indoor) | Enclosed Shed/Restricted Use |
| | Road Salt and Sand | On-going | Varies | Inside Storage Shed | Enclosed Shed/Housekeeping |
| | Sodium Acetate | On-going | Varies | Inside Storage | Indoor Storage/Restricted use |
| | Glycol Deicer | On-going | 12,000 | 2 x 6,000 gal ASTs | Enclosed Shed/ Restricted Use |
| 3 | Road Salt and Sand | On-going | Varies | Application Vehicles | Stored in enclosed shed/Restricted use |
| | Lawn Care Products | On-going | Varies | Application Vehicles | Restricted use |

## Table 3-2
## Inventory of Exposed Materials

| Drainage Area | Description | Period of Exposure | Quantity (gallons) | Method of Storage | Structural or Non-Structural Control Measures |
|---|---|---|---|---|---|
| | AFFF (Endeavor Maintenance) | On-going | 2,000 | 2,000 AST | Restricted use |
| | Jet Fuel (Jet A) (Signature) | On-going | 440,000 | 2 x 220,000 ASTs | Double-walled with containment system |
| | Av Gas (Signature) | On-going | 12,000 | 12,000 AST | Restricted use |
| | Waste Fuel (Signature) | On-going | 500 | 500 AST | Restricted use |
| | AFFF (Signature) | On-going | 300 | 300 AST | Restricted use |

## 3.12 Spills and Leaks

Incidents Resulting in a "Hazardous Condition":
A "hazardous condition" as defined in 567 IAC Chapter 131, is "any situation involving the actual, imminent or probable spillage, leakage, or release of a hazardous substance onto the land, into a water of the state or into the atmosphere which, because of the quantity, strength and toxicity of the hazardous substance, its mobility in the environment and its persistence, creates an immediate or potential danger to the public health or safety or to the environment."

Any spills resulting in a "hazardous condition" will be recorded along with details of the cleanup actions. The incidents will be reported and recorded in accordance with the procedures outlined in Section 3 and 5 of the facility Spill Prevention Control and Countermeasures (SPCC) Plan. The reporting form is included in Appendix F of the SPCC Plan. Records of any incidents will be maintained for the term of the permit.

In the event of a "hazardous condition", the NPDES permit requires this SWPPP be modified to provide a description of the release, the circumstances leading to the release, date of the release, and response actions. Any resulting changes to pollution prevention measures and/or controls must also be described.

In accordance with the requirements established within the Airport's NPDES Permit, Table 5 contains a historical profile of spills at areas of the Airport that are exposed to precipitation or otherwise drain to a storm water conveyance. This record maintains occurrences at least three years prior to the issuance of the Permit to the present. Figure 6 shows locations of the spills from 2013 through 2019.

Incidents Exceeding Effluent Limitations:
Records of incidents resulting in discharges in excess of the NPDES permit effluent limitations are maintained with this SWPPP in Appendix G. The records include the date, a description of the incident, response actions, and measures taken to prevent reoccurrence of pollutant discharges to waters of the State.

## 3.13 Sampling Data

Storm water discharge sampling data is provided in the tables in Appendix E. Data from future sampling events will be incorporated into this SWPPP. The data will be reviewed to evaluate compliance with the effluent limitations established in Part IV of the NPDES permit and to identify any control measures that are not functioning properly.

# 4 Measures and Controls

## Best Management Practices

A storm water Best Management Practice (BMP) is defined as any program, technology, process, siting criteria, operating method, measure, or device that controls, removes, or reduces pollution. The NPDES Permit requires the development and implementation of BMPs to address pollutants originating from industrial sources. Appropriate BMPs are selected for industrial facilities based on facility-provided information and site inspections. Areas of actual or potential pollutant contact are evaluated and applicable BMPs implemented to eliminate or minimize the pollutants. BMPs are classified into the categories *quality* control and *quantity* control, based on the intended storm water control objective.

Quality control BMPs are designed to limit the types and concentrations of pollutants found in storm water runoff. Quality control BMPs can be subdivided into *source control* BMPs and *treatment control* BMPs. Source control BMPs are operational practices intended to prevent pollutants from entering surface waters by altering activities to eliminate or minimize pollution produced as a result of the activity. Source control BMPs are categorized as general or activity- based BMPs.

Examples of general source control BMPs include:

- Moving an outdoor operation indoors
- Placing storage containers for recyclable oil in sheds or under cover
- Storing hazardous materials/wastes in covered, contained areas

Activity-based source control BMPs focus on specific activities such as:

- Aircraft, ground vehicle, and equipment maintenance
- Aircraft and ground vehicle fueling
- Lavatory service operations

Treatment control BMPs are optional practices intended to remove pollutants in storm water through treatment. Examples of treatment control BMPs include:

- Retention ponds
- Oil/water separators
- Grass swales

A properly designed and implemented spill response program can also be an effective method for protecting storm water quality. Spill response programs rely upon employee awareness and training to be effective.

Quantity control BMPs are designed to control the runoff volume or peak discharge rate of storm water. The use of storm water detention basins is one example of a quantity control BMP. However, a properly designed and maintained detention basin can also decrease the amount of pollutants entering surface waters, thereby improving receiving water quality.

The following discussion describes existing source control and treatment control BMPs implemented at DMAA. A complete listing of potential BMP's is provided in Appendix H. An implementation program detailing scheduling, pollution prevention team (PPT) personnel, training requirements, and facility inspection protocol is provided for proper installation and maintenance of proposed and existing BMPs for DMAA tenants.

## 4.1 Good Housekeeping Practices

Good housekeeping practices are maintained by DMAA and tenant facilities to keep the facility clean and orderly. The objective of the practice is to reduce potential pollutants in storm water by preventing exposure of industrial activities and significant materials. Common practices employed during operations at the airport facilities include:

- Maintaining clean and organized work/material storage areas
- Maintain updated materials inventory to prevent overstocking/overflow into outdoor storage areas
- Keeping floors of maintenance and repair areas clean and dry to prevent tracking of materials outdoors
- Conduct regular sweeping and manual litter pickup
- Use drip pans when performing maintenance activities
- Thoroughly drain oil filers prior to recycling
- Use biodegradable or alternative products if available
- Reduce any unnecessary storage of equipment or parts
- Follow oil/fuel transfer procedures to prevent accidental spills or leaks
- Immediately clean up any incidental spills of oil, fuel, or deicer using dry absorbent materials
- Drain all parts of fluids prior to recycling or disposal
- Keep lids on outdoor refuse containers closed
- Maintain regular pickup schedule for refuse
- Restrict equipment washing activities to designated areas
- Conduct routine inspections to identify housekeeping issues requiring attention

### 4.1.1 Aircraft, Ground Vehicle and Equipment Maintenance Areas

Aircraft, ground vehicle, and equipment maintenance activities are performed at the Airfield Maintenance Facility, Rental Car Facility, Des Moines Fly Service, and Fed-Ex. All maintenance and material storage areas are inside the facility buildings, preventing exposure to storm water. Good housekeeping practices are employed at each location to reduce potential outdoor tracking or exposure of significant materials to storm water.

### 4.1.2 Aircraft, Ground Vehicle, and Equipment Cleaning Areas

Aircraft, ground vehicle, and equipment cleaning operations are conducted at the Rental Car Facility, Airfield Maintenance Facility, Cargo Apron, and tenant and FBO facilities.

Car washing at the Rental Car Facility is conducted in the enclosed car wash bay. Vehicle and equipment washing at the Airfield Maintenance Facility is performed in an enclosed wash bay, located inside the building. Water from the wash bays is routed to the sanitary sewer system.

Vehicle and aircraft cleaning that occurs at tenant and FBO facilities occurs in was bays with floor drains that drain to the sanitary sewer system.

### 4.1.3 Aircraft, Ground Vehicle, and Equipment Storage Areas

Maintenance activities are performed at the Airfield Maintenance Facility, Rental Car Facility, Des Moines Fly Service, and FedEx. Aircraft, ground vehicles, and equipment awaiting maintenance are stored inside the facility buildings to prevent exposure to storm water. Small commercial and private aircraft are stored inside hangars.

### 4.1.4 Material Storage Areas

New and used oil products associated with maintenance of aircraft and ground equipment are stored at the Rental Car Facility, Airfield Maintenance Facility, and Cargo area. The materials are stored indoors and are not exposed to precipitation. In addition to being indoors, structural control measures are employed at the oil storage areas inside the buildings. Structural controls include spill pallets, drip pans, double-walled tanks, concrete floors and walls, overfill prevention devices, interstitial monitors, level gauges and/or high level alarms. The containers and storage areas are inspected during daily operations and on a regular schedule in accordance with the facility SPCC Plan.

Bulk fuel is stored outdoors predominantly in underground storage tanks. Aboveground fuel storage tanks are listed below. All of the aboveground fuel storage tanks are double-walled, equipped with interstitial monitors, and spill/overfill prevention devices. The systems are operated, maintained, and inspected in accordance with the requirements outlined in the facility SPCC Plan.

- DMAA South Cargo
- Signature Flight Support
- IANG Fuels Management

Deicer material is stored in aboveground containers at the Airfield Operations, Glycol Storage Facility, Air Cargo facility, and FedEx. The deicer containers at FedEx are positioned on the apron in an area that drains to the underground storage containment system. The deicer storage areas are inspected during daily operations and on a monthly schedule.

Road salt and sand is stored in an enclosed building located adjacent to the Airfield Maintenance Facility. Any spills occurring during loading/unloading operations are promptly cleaned up by sweeping.

### 4.1.5 Airport Fuel System and Fueling Areas

Bulk fuel for aircraft is stored both underground and in aboveground storage tanks. All of the aboveground fuel storage tanks are double-walled, equipped with interstitial monitors, and spill/overfill prevention devices. The loading/unloading areas are constructed with curbed concrete containment systems. The systems are operated, maintained, and inspected in accordance with the requirements outlined in the facility SPCC Plan.

Aircraft fueling operations are performed on the Passenger Terminal Apron, South Cargo Apron, Signature Flight Support FBO Apron, and Elliott Aviation FBO Apron. Minor fuel spills are contained and cleaned up using spill kits on the service trucks. In the event of larger spills, cleanup materials maintained in the facility spill response trailer will be employed to contain and clean up the spill.

Fueling of support vehicles is conducted at three dispenser pumps located near the Airfield Maintenance Facility and inside of Gate 5. The concrete surrounding the dispensers is sloped to a trench drain that routes fluids to an oil/water separator system.

## 4.2 Source Reduction

Source control of storm water pollution is always the first approach to consider, since it provides control for the contamination without treatment. Personnel deicing aircraft are trained and knowledgeable of techniques to prevent excessive application. Adjusting application rates and formulation ratios will be evaluated by qualified personnel, consistent with applicable flight safety and FAA requirements. Source reduction at the airport is also achieved through periodic review of less toxic alternatives.

Mechanical means of snow and ice removal within the airfield is the primary practice. The use of urea-based pavement deicers is prohibited. In addition, use of chemical pavement deicers is restricted, and only used when necessary. The Airport Authority has an in-pavement ice detection system for runways 5-23 and 13-31. This system is a valuable tool in decision-making regarding chemical application to the runways, thereby reducing as much as possible its use and eventual entry into the storm water system. For landside operations, calcium chloride products will be utilized on all landside areas including the multistory auto parking ramps.

## 4.3 Preventative Maintenance

The preventive maintenance program includes monthly inspection of facility equipment and storm water management controls to identify any conditions that could result in system breakdown or failures. The inspections include review of equipment (e.g. mobile and stationary storage tanks and dispensing systems) and storm water management systems, such as intakes, valve gates, oil/water separators, diversion berms and channels, and collection/detention basins. During the winter months frequent inspection of the underground stormwater containment tanks occur weekly and monthly. Deficiencies or potential problems are recorded on the monthly inspection form and maintenance personnel are notified of any required maintenance or repairs. Follow up on the implementation of corrective actions is performed during the subsequent inspection. Inspection forms are provided in Appendix F.

In addition, storm water monitoring results are evaluated to identify any problem areas that could contribute pollutants to storm water discharges. Implementation of additional controls will be pursued to address any elevated constituent levels observed in the storm water sampling data.

## 4.4 Spill Prevention and Response Procedures

This SWPPP identifies significant materials and their storage and use locations. Flow pathways and directions within each drainage area are described to assist with response and recovery of any leaked or spilled materials. Indications of a spill or release include obvious visible signs such as leaking from a container or vehicle, a visible sheen on water, colors in water, or detection of an odor.

Facility personnel are trained to respond to spills in a prompt, safe, and effective manner. While maintaining personal safety, the immediate objective is to stop the source of the release to prevent further migration into storm sewers or channels flowing off the property. Minor spills are contained and cleaned up using dry absorbent materials from the spill kits maintained on the service trucks or at various locations on the property. In the event of larger spills, airport equipment and cleanup materials in the facility spill response trailer will be employed to contain and clean up the spill.

This SWPPP also references the provisions outlined in the facility SPCC Plan. The SPCC Plan establishes standard operating procedures for system maintenance and spill prevention at fuel storage and dispensing areas. In addition, the plan outlines spill response actions and establishes inspection and employee training schedules.

Spills requiring notification of the State Agency (DNR) include discharges meeting the definition of a "hazardous condition." A hazardous condition is defined in 567 IAC Chapter 131 as "any situation involving the actual, imminent or probable spillage, leapotassium acetatege, or release of a hazardous substance onto the land, into a water of the state or into the atmosphere which, because of the quantity, strength and toxicity of the hazardous substance, its mobility in the environment and its persistence, creates an immediate or potential danger to the public health or safety or to the environment." Detailed hazardous condition notification and reporting procedures are outlined in the facility SPCC Plan.

In the event of a "hazardous condition", the NPDES permit requires this SWPPP be modified to provide a description of the release, the circumstances leading to the release, date of the release, and response actions. Any resulting changes to pollution prevention measures and/or controls must also be described.

Spills, releases, or other incidents resulting in discharges of pollutants in excess of the NPDES permit effluent limitations are recorded and maintained within this SWPPP. The records include the date and a description of the incident, response actions, and measures taken to prevent reoccurrence of pollutant discharges to waters of the State (see Appendix G).

## 4.5 Management of Runoff

Structural and non-structural control measures implemented to contain and reduce potential pollutant discharges from airport deicing and fueling activities include:

- Runoff from deicing containment areas is collected by storm sewer intakes and routed underground to two 10,000 gallon storage tanks. The fluids are then discharged from the basins into sanitary sewer system at a determined rate for treatment at the Des Moines Metropolitan Wastewater Reclamation Authority. Discharge is conducted in accordance with Wastewater Discharge Permit No. A10016 issued on June 1, 2019. The permit expires on June 1, 2023. A copy of the permit is provided in Appendix A.
- Snow plowing and stockpile placement within containment areas is conducted to reduce the amount of glycol contaminated snow at deicing areas.
- Structural and non-structural controls in-place at the bulk fuel transfer and storage locations are outlined in the SPCC Plan. Controls include double-walled tanks, containment structures, oil/water separators, and maintenance and inspection procedures.

In addition, existing traditional storm water management measures at the facility are continually maintained to reduce potential pollutants in storm water discharges. These measures include:

- Storm water infiltration and detention basins
- Vegetated swales and diversion berms
- Maintenance of vegetated cover
- Inlet filtration and riprap protection
- Outlet sluice gate valves
- Outlet let down and riprap protection
- Check dams and velocity dissipation structures
- Silt fencing and straw bale filters
- Oil/water separator systems

Considering the physical and chemical nature of potential pollutants associated with industrial activities at the airport, the existing storm water management features, practices, and planned improvements are deemed reasonable and appropriate in preventing pollutant discharges in storm water.

## 4.6 Inspections

Monthly inspections of operational and inactive areas are conducted to ensure storm water management measures are effective in reducing pollutant loadings in storm water runoff and to identify any potential problems with procedures or controls. Tenants (co-permittees) are allowed to use inspection forms specific to their operations, provided the forms are approved by DMAA. Inspection forms are provided in Appendix F.

The inspections include the following activities.

- Review storm water drainage areas and outfalls for any evidence of pollutants entering the system
- Inspect active operational areas that are used for the storage of materials or wastes that are exposed to precipitation
- Evaluate the integrity and operation of the storm water collection system including valve systems, diversion ditches and detention basins
- Inspect locations where equipment and vehicles enter and exit the site

- Observe/inspect fixed fuel-dispensing areas and dispensing equipment
- Evaluate the effectiveness of non-structural measures to reduce pollutant loadings and whether additional measures are needed
- Observe structural measures, sediment controls, and other BMPs to ensure proper operation
- Inspect and inventory the equipment required for implementation of pollution prevention and spill response measures
- Monitor all on-going construction to confirm the adequacy of the erosion control measures being implemented
- Monitor the operations of airport tenants, including fueling and deicing operations to ensure their cooperation with implementation of this SWPPP
- Prepare a report summarizing the inspections results.
- Notify maintenance personnel of any procedural changes or required corrective actions
- Follow up to ensure implementation of any corrective actions
- Records of inspections shall be maintained for a period of at least 5 years. The use of a checklist developed by the pollution prevention team is advised.

## 4.7 Pollution Prevention Training

Employee training on storm water management practices will be conducted annually. The training session will cover the contents of this SWPPP, pollution prevention, maintenance activities, spill containment and cleanup procedures, control measures implemented to achieve compliance with effluent limitations, storm water monitoring, inspections, and reporting requirements.

This SWPPP and issues related to its implementation will be communicated to the responsible management personnel for all airport tenants and facility operators within the Airport. Tenants (co-permittees) choosing not to participate in the Airports' training session shall perform annual training of their staff. The training program implementation, including tenant participation, will be documented.

## 4.8 Recordkeeping and Internal Reporting Procedures

The following records will be maintained for the duration of the permit or for a period of at least five years from the date of measurement, report, or inspection and incorporated into this SWPPP.

- Records of inspections, maintenance, corrective actions and related reports
- Records documenting spills, leaks, and discharges exceeding effluent limitations (See Appendix G)
- Employee training records
- Records of monitoring information, including sampling forms and laboratory reports

## 4.9 Non-Storm Water Discharges

The following non-storm water discharges are authorized by the facility NPDES permit provided the non-storm water component of the discharge is in compliance with the conditions set forth in Part III.A.3.i of the NPDES permit and this SWPPP.

- Discharges from firefighting activities
- Fire hydrant flushing
- Potable water sources including waterline flushing, drinking fountain water, uncontaminated compressor condensate
- Irrigation drainage
- Lawn watering
- Routine external building wash-down that does not use detergents or other compounds
- Pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents or other compound are not used
- Air-conditioning condensate
- Uncontaminated springs
- Uncontaminated groundwater
- Uncontaminated flows from foundation or footing drains

A Certification Statement for these non-stormwater discharges, satisfying the requirements of Part III.A.3.i of the NPDES permit is included in Appendix C.

## 4.10 Sediment and Erosion Control

The airport continually maintains vegetation on the property to reduce potential for erosion and enhance storm water filtration and infiltration. Monthly inspections include review of storm water conveyances and outfall locations to identify any erosion problems.

Construction projects pose the greatest potential for erosion and mobilization of sediment. Construction activities such as clearing, grading, excavating, grubbing or filling have potential to transport sediments away from the site. These activities are primarily performed by temporary contractors hired by the Airport Authority. For land disturbances greater than one acre, the construction contractor is required by state regulations to submit a NPDES General Permit Number 2, "Stormwater Discharges Associated with Industrial Activities for Construction Activities", to limit sedimentation and erosion. In addition, a NOI must be submitted to IDNR 24 hours prior to the start of construction. The Airport Authority will require construction contractors to submit a Sediment and Erosion Control Plan to the design engineer and implement appropriate sediment and erosion control measures for all construction activities that involve land disturbances.

The purpose of these control measures is to:

- Minimize the amount of time that soil is exposed
- Prevent runoff from flowing across disturbed areas and provide drainage for the increased runoff

- Stabilize the exposed soil as soon as possible
- Slow runoff flowing across the disturbed area(s)
- Remove the sediment from storm water before it leaves the facility

Measures utilized at the airport to control sediment and erosion from storm water include:

- Earthen berms
- Interceptor trenches
- Diversion ditches
- Conduits and let-down pipes
- Riprap inlet/outlet protection
- Storm water detention basins
- Straw bale filters and silt fences
- Mulching and seeding
- Maintenance of vegetative buffers on and surrounding the operational areas.

All of these measures are ongoing and will continue to be implemented as a part of standard operations at the airport. The DMAA will monitor all such construction activities for compliance with the permit.

# 5 Comprehensive Site Compliance Evaluation

A comprehensive site compliance evaluation will be performed by qualified personnel on an annual basis. The compliance evaluation may be conducted in place of one of the routine monthly inspections required by the NPDES permit. The evaluation will include the following activities.

- A review and evaluation of visual monitoring and sample analytical results collected during the annual period.
- Industrial activity areas (e.g. deicing areas and controls, fueling areas, material storage areas) that contribute to storm water discharges will be visually inspected. The areas will be inspected for evidence of, or potential for, pollutants entering the drainage system.
- Measures to reduce pollutants in storm water will be evaluated to determine if they are adequate and properly implemented in accordance with the terms of the NPDES permit. If any measures are determined inadequate, additional controls or alternative measures will be evaluated and implemented as appropriate to reduce pollutants in storm water discharges.
- Structural controls, sediment and erosion control measures, collection systems and basins, and other structural pollution prevention measures identified in this SWPPP will be inspected to ensure that they are in good condition and operating correctly.
- Equipment required for implementing the provisions of this SWPPP will be visually inspected to ensure proper operation and necessary supplies (e.g. inventory of supplies in spill response trailer, on service trucks, and other spill kits on the property).
- If the evaluation identifies changes to the storm water management program, this SWPPP will be revised within 2 weeks of the evaluation. Any required changes in procedures or control measures will be implemented within 12 weeks after the evaluation.
- A report summarizing the scope of the evaluation will be prepared and retained with this SWPPP for 5 years from the date of the evaluation. The report will be signed in accordance with Part VII.E. of the NPDES permit (Signatory Requirements) and will include the following information.

    - Personnel making the evaluation.
    - Date(s) of the evaluation.
    - Major observations relating to the implementation of the SWPPP, including a summary of sample analytical results collected during the monitoring period.
    - A description of any changes in procedures or controls resulting from the evaluation.
    - A description of any incidents of noncompliance. Where a report does not identify any incidents of noncompliance, the report shall contain a certification that the facility is in compliance with the SWPPP and NPDES permit.

## 5.1 Additional Pollution Prevention Plan Requirements

The facility (Airport) must comply with applicable requirements in the municipal storm water management program developed under the NPDES permit issued to the City of Des Moines to operate its wastewater treatment facility.

## 5.2 Signature and Plan Review

The Plan shall be signed in accordance with specifications outlined under Part VII of the NPDES permit. The Plan shall be retained on-site at the facility (Airport). The facility shall make the SWPPP, annual site compliance inspection reports, comprehensive site compliance evaluation reports, or other information available upon request to the IDNR.

The IDNR may notify the co-permittees at any time that the Plan does not meet one or more of the minimum requirements of the NPDES permit. Such notification shall identify those provisions of the permit that are not being met by the Plan, and identify which provisions of the Plan require modification in order to meet the minimum requirements of the Permit. Co-permittees shall make the required changes and shall submit to the IDNR, within guidelines set forth in the Permit, a written certification that the requested changes have been made.

# 6 Storm Water Discharge Monitoring and Reporting

Storm water monitoring activities are conducted in accordance with Parts IV and V of the NPDES permit (Appendix A). Effluent limitations for specific water quality parameters at each outfall location are established in Part IV. Sampling frequencies, analytical parameters, and additional monitoring and reporting requirements are outlined in Part V of the NPDES permit.

The monitoring and reporting requirements include:

- Sampling and analysis of discharges from Outfalls 001, 002, and 003
- Visual inspection of samples collected during sampling activities
- Maintenance of records and analytical results from sampling events
- Monitoring the underground deicing tanks levels, pumping volume, and precipitation
- Submittal of analytical data and visual observations to the DNR within 15 days of the end of each quarter
- The quarterly analytical data is to be submitted in the DNR electronic format

Table 6-1
Permit Required Monitoring Locations

| Outfall | Location(s) | Latitude / Longitude |
|---|---|---|
| 001 | Yeader Creek, culvert east of Fleur Drive | 41.536766° N / -93.644849° W |
| 002 | Frink Creek, east of SW 42nd Street | 41.535955° N / -93.674015° W |
| 003 | Middle Creek, culvert north of Army Post Road | 41.521305 ° N / -93.656368° W |

A summary of the sampling frequencies, analytical parameters, and effluent limitations for each outfall is provided in Appendix D.

# 7 Effluent Limitations and Compliance

The NPDES permit establishes effluent limitations for the following parameters.

- CBOD
- Oil and Grease
- Ethylene Glycol
- Propylene Glycol
- pH

The effluent limitations vary for each outfall depending on the location of the outfall and classification of the receiving water. A summary of the effluent limitations is provided in Appendix D.

In accordance with Part VII.Q. of the NPDES permit, DMAA will orally report any noncompliance that may endanger human health or the environment within 24 hours of discovering the condition. Within 5 days of the occurrence, a written submission will be prepared and submitted to DNR.

The written report will include:

- A description of the noncompliant event and its cause
- the period of noncompliance including exact dates and times
- whether the noncompliance has been corrected or the anticipated time it is expected to continue
- and the steps taken or planned to reduce, eliminate, and prevent a reoccurrence of the noncompliance

The following instances of noncompliance will be reported within 24 hours of occurrence:

- any unanticipated bypass which exceeds any effluent limitation
- any upset which exceeds an effluent limitation
- any violation of a maximum daily discharge limit for any of the pollutants listed in the permit

# 8 SWPPP Revisions

As outlined in Section 5 of this SWPPP, a Comprehensive Site Compliance Evaluation will be conducted annually. If the evaluation results in changes to the storm water pollution prevention program, the NPDES permit requires this SWPPP be revised within 2 weeks of the evaluation to describe the changes in pollution prevention measures and/or controls.

Within 14 days of the occurrence of any "hazardous condition", this SWPPP must be modified to provide a description of the release, the circumstances leading to the release, date of the release, and response actions. Any resulting changes to pollution prevention measures and/or controls must also be described.

The SWPPP must be amended whenever there is a change in design, construction, operation, or maintenance, that has a significant effect on the potential for the discharge of pollutants in storm water or if the SWPPP proves ineffective in eliminating or significantly minimizing the discharge of pollutants associated with industrial activity.

# 9 Additional SWPPP Requirements

Discharge of liquid from the two underground containment tanks into the City of Des Moines sanitary sewer is authorized by a Wastewater Discharge Permit with the Des Moines Metropolitan Wastewater Reclamation Authority (WRA). The current agreement is valid until June 1, 2023. A copy of the permit is provided in Appendix A.

DMAA will ensure conformance with the conditions outlined in the agreement and will renew or amend the agreement as necessary to authorize the discharge of storm water contaminated by glycol or other deicing products. Any additional discharge requirements established by the Des Moines Metropolitan Wastewater Reclamation Authority will be incorporated into this SWPPP.

# 10 SWPPP Certification

STORM WATER POLLUTION PREVENTION PLAN
CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

| Kevin Foley | |
|---|---|
| *Name (Printed):* | *Signature:* |
| *Executive Director* | |
| *Title:* | *Date:* |

# Figures

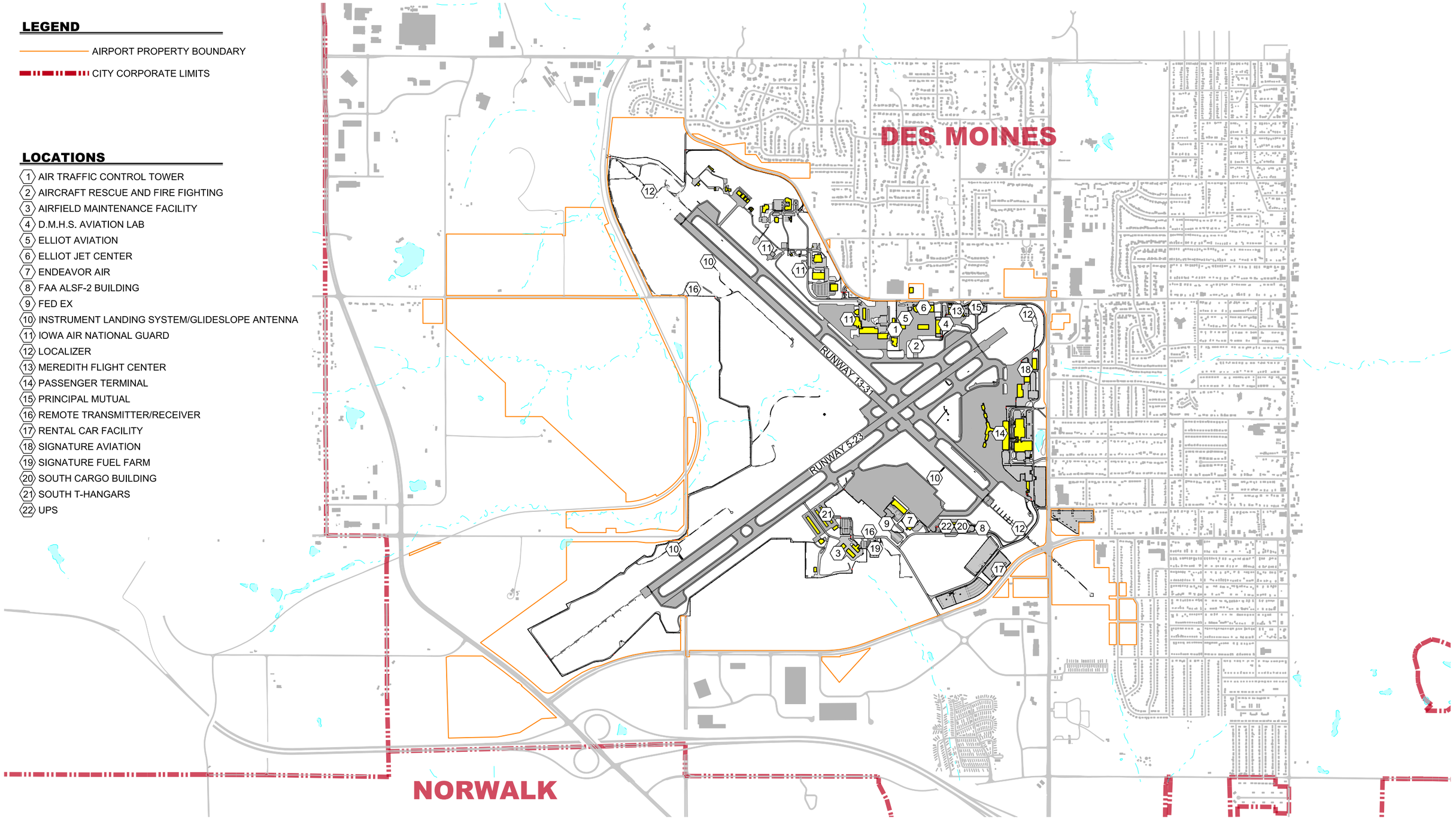
## LEGEND

AIRPORT PROPERTY BOUNDARY

CITY CORPORATE LIMITS

## LOCATIONS

1. AIR TRAFFIC CONTROL TOWER
2. AIRCRAFT RESCUE AND FIRE FIGHTING
3. AIRFIELD MAINTENANCE FACILITY
4. D.M.H.S. AVIATION LAB
5. ELLIOT AVIATION
6. ELLIOT JET CENTER
7. ENDEAVOR AIR
8. FAA ALSF-2 BUILDING
9. FED EX
10. INSTRUMENT LANDING SYSTEM/GLIDESLOPE ANTENNA
11. IOWA AIR NATIONAL GUARD
12. LOCALIZER
13. MEREDITH FLIGHT CENTER
14. PASSENGER TERMINAL
15. PRINCIPAL MUTUAL
16. REMOTE TRANSMITTER/RECEIVER
17. RENTAL CAR FACILITY
18. SIGNATURE AVIATION
19. SIGNATURE FUEL FARM
20. SOUTH CARGO BUILDING
21. SOUTH T-HANGARS
22. UPS




DES MOINES International Airport

# STORM WATER POLLUTION PREVENTION PLAN
# SITE LOCATIONS

2000 0 1000 2000 4000

SCALE: 1"= 2000'

Coordinate System: NAD 1983 StatePlane Iowa South FIPS 1402 Feet
Datum: North American Datum 1983
Ellipsoid: GRS 1980

| | |
|---|---|
| DRAWN: | MJS |
| CHECKED: | BMB |
| DATE: | 1/30/2020 |
| FILE: | 17-E006 |

Fig. 1

1/30/2020 c:\pw_workdir\pw_ie\fvd_pmk1\d03295142019_SWPPP Update.dgn

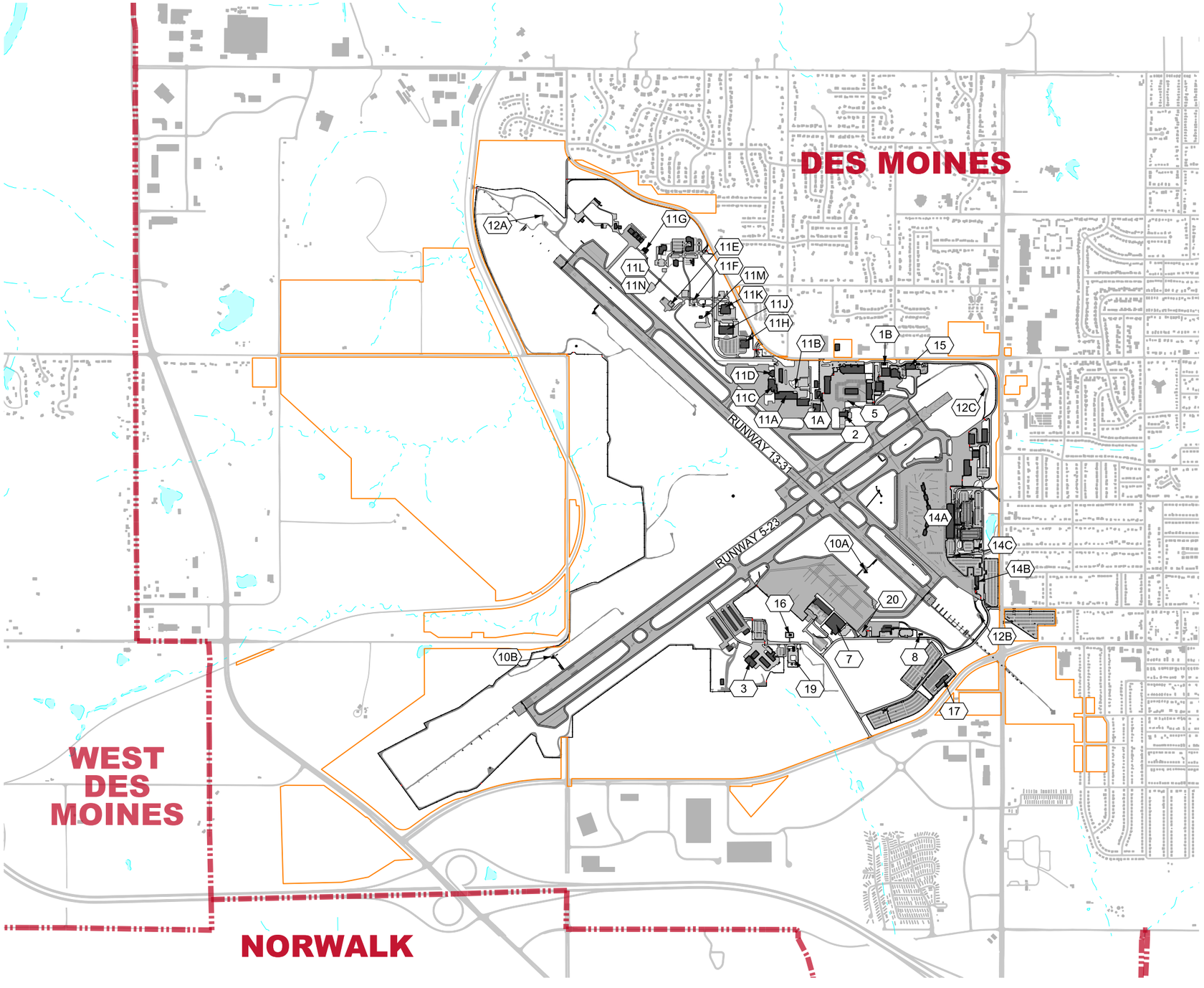
## LEGEND

AIRPORT PROPERTY BOUNDARY

CITY CORPORATE LIMITS

## FUEL STORAGE TANK LOCATIONS

| TANK ID# | OWNER / OPERATOR | FUEL TYPE | QUANTITY (GALLONS) |
|---|---|---|---|
| 1A | FAA CONTROL TOWER GENERATOR | DIESEL | 1,000(UST) |
| 1B | FAA RADAR SITE | DIESEL | 1,000(UST) |
| 2 | FIRESTATION | AFFF | 1,000 (MOBILE AST) |
| 3 | DES MOINES AIRPORT AUTHORITY - FIELD MAINTENANCE | DIESEL<br>ETHANOL<br>E-36 | 10,000(UST)<br>10,000(UST)<br>12,000(UST) |
| 5 | ELLIOTT AVIATION | JET A<br>100LL<br>DIESEL | 20,000(UST)<br>20,000(UST)<br>500(UST) |
| 7 | ENDEAVOR MAINTENANCE FACILITY | AFFF | 2,000 (AST)<br>(2 X 1,000 GAL. TANKS) |
| 8 | FAA ALSF GENERATOR | DIESEL | 1,000(UST) |
| 10A | FAA RUNWAY 31 - GLIDESLOPE GENERATOR | DIESEL | 500(UST) |
| 10B | FAA GENERATOR | DIESEL | 500(UST) |
| 11A | IANG BUILDING 100 | DIESEL | 300(AST) |
| 11B | IANG BUILDING 105 | DIESEL<br>UNLEADED | 5,000(UST)<br>5,000(UST) |
| 11C | IANG BUILDING 124 | JP8 | 300(AST) |
| 11D | IANG BUILDING 125 | DIESEL<br>DF2<br>JP8 | 105(AST)(MOBILE)<br>300(AST)<br>300(AST)(MOBILE) |
| 11E | IANG ENGINE TEST PAD | JP8 | 2,500(AST)(MOBILE) |
| 11F | IANG BUILDING 270 | LOX<br>LIN<br>LIN<br>JP8<br>JP8<br>LOX<br>PLUS100 | 3000(AST)<br>2000(AST)<br>2000(AST)<br>300(AST)(MOBILE)<br>?(AST)<br>3000(AST)<br>(2) @ 400(AST)(NOT IN USE) |
| 11G | IANG BUILDING 316 | DF2 | 300(AST) |
| 11H | IANG BUILDING 410 | DIESEL<br>UNLEADED | 50(AST)(MOBILE)<br>50(AST)(MOBILE) |
| 11J | IANG BUILDING 430 | USED OIL<br>USED OIL<br>USED OIL<br>USED OIL | 240(AST)<br>400(AST)<br>500(AST)<br>500(AST)(NOT IN USE) |
| 11K | IANG BUILDING 440 | USED OIL<br>USED OIL<br>DF2 | 360(AST)<br>240(AST)<br>200(AST)(MOBILE) |
| 11L | IANG BUILDING JFB-E<br>IANG BUILDING JFF,G<br>IANG BUILDING JFA<br>IANG FL1 | E36<br>AC DEICE<br>AC DEICE<br>JP8 | 4@1200(AST)<br>2@1200(AST)<br>2500(AST)(NOT IN USE)<br>300(AST)(MOBILE) |
| 11M | IANG FUELS MGMT. | JP8 | 210,000 (2 X 105,000 AST'S) |
| 11N | IANG BUILDING ? | JP8 | 2000(AST) |
| 12A | FAA RUNWAY 13 LOCALIZER GENERATOR | DIESEL | 500(UST) |
| 12B | FAA RUNWAY 13 LOCALIZER GENERATOR | DIESEL | 500(UST) |
| 12C | FAA RUNWAY 23 LOCALIZER GENERATOR | DIESEL | 500(UST) |
| 13 | MEREDITH CORPORATION | JET A | 20,000(UST) |
| 14A | DES MOINES AIRPORT AUTHORITY - AIRFIELD GENERATOR | DIESEL | 2,300(UST) |
| 14B | DES MOINES AIRPORT AUTHORITY - EAST CARGO | DIESEL | 10,000(UST) |
| | | ETHANOL | 10,000(UST) |
| 14C | GLYCOL STORAGE FACILITY | TYPE 1 GLYCOL<br>TYPE 1 GLYCOL<br>TYPE 1 GLYCOL<br>TYPE 1 GLYCOL<br>TYPE 1 GLYCOL<br><br>TYPE 4 GLYCOL<br>TYPE 4 GLYCOL<br>TYPE 4 GLYCOL | 6,000 (AST)<br>9,200 (AST)<br>4,600 (AST)<br>10,000 (AST)<br>12,000 (AST)<br>(2 X 6000 GAL. TANKS)<br>1,600 (AST)<br>6,000 (AST)<br>1,440 (AST)<br>(6 X 240 GAL. TOTES) |
| 15 | PRINCIPAL CORPORATION | JET A | 15000(UST) |
| 16 | FAA REMOTE TRANSMITTER GENERATOR | DIESEL | 500(UST) |
| 17 | RENTAL CAR FACILITY | ETHANOL | 15,000 (UST) |
| 19 | SIGNATURE FLIGHT SUPPORT | JET A<br>AVGAS<br>WASTE FUEL<br>AFF | 440,000 (2 X 220,000 AST'S)<br>12000<br>500<br>300(AST) |
| 20 | DES MOINES AIRPORT AUTHORITY - SOUTH CARGO | DIESEL<br>ETHANOL | 10,000(UST)<br>10,000(UST) |




DES MOINES International Airport

# STORM WATER POLLUTION PREVENTION PLAN
# FUEL STORAGE TANK LOCATIONS

2000 0 1000 2000 4000

SCALE: 1"= 2000'

Coordinate System: NAD 1983 StatePlane Iowa South FIPS 1402 Feet
Datum: North American Datum 1983
Ellipsoid: GRS 1980

| | |
|---|---|
| DRAWN: | MJS |
| CHECKED: | BMB |
| DATE: | 1/30/2020 |
| FILE: | 17-E006 |

Fig. 2

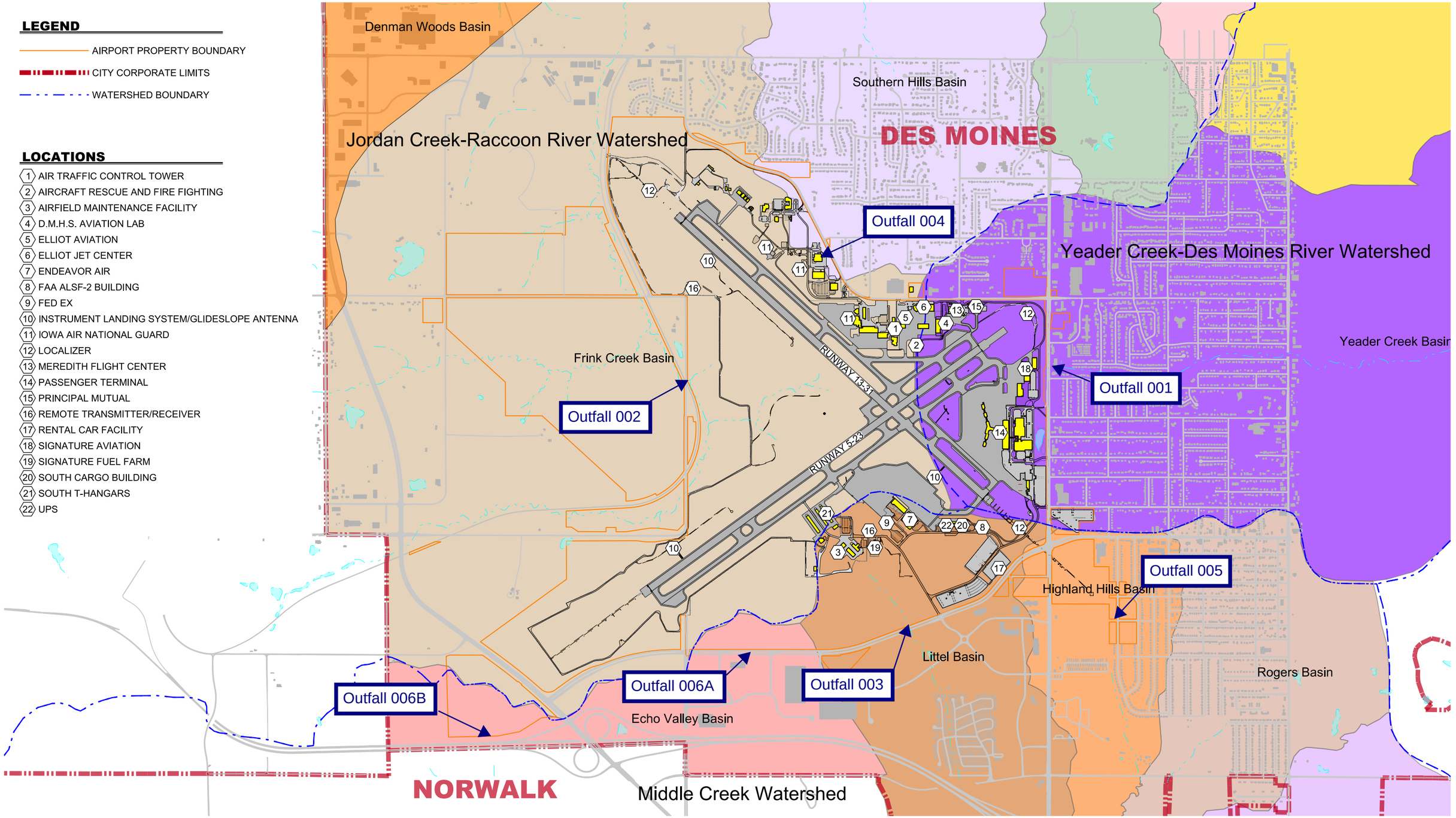
1/30/2020 c:\pw_workdir\pw_ie\fvd_pmk1\d03295142019_SWPPP Update.dgn

## LEGEND

- AIRPORT PROPERTY BOUNDARY
- CITY CORPORATE LIMITS
- WATERSHED BOUNDARY

## LOCATIONS

1. AIR TRAFFIC CONTROL TOWER
2. AIRCRAFT RESCUE AND FIRE FIGHTING
3. AIRFIELD MAINTENANCE FACILITY
4. D.M.H.S. AVIATION LAB
5. ELLIOT AVIATION
6. ELLIOT JET CENTER
7. ENDEAVOR AIR
8. FAA ALSF-2 BUILDING
9. FED EX
10. INSTRUMENT LANDING SYSTEM/GLIDESLOPE ANTENNA
11. IOWA AIR NATIONAL GUARD
12. LOCALIZER
13. MEREDITH FLIGHT CENTER
14. PASSENGER TERMINAL
15. PRINCIPAL MUTUAL
16. REMOTE TRANSMITTER/RECEIVER
17. RENTAL CAR FACILITY
18. SIGNATURE AVIATION
19. SIGNATURE FUEL FARM
20. SOUTH CARGO BUILDING
21. SOUTH T-HANGARS
22. UPS




DES MOINES International Airport

# STORM WATER POLLUTION PREVENTION PLAN
# DRAINAGE BASINS

2000 0 1000 2000 4000

SCALE: 1"= 2000'

Coordinate System: NAD 1983 StatePlane Iowa South FIPS 1402 Feet
Datum: North American Datum 1983
Ellipsoid: GRS 1980

| | |
|---|---|
| DRAWN: | MJS |
| CHECKED: | BMB |
| DATE: | 1/30/2020 |
| FILE: | 17-E006 |

Fig. 3

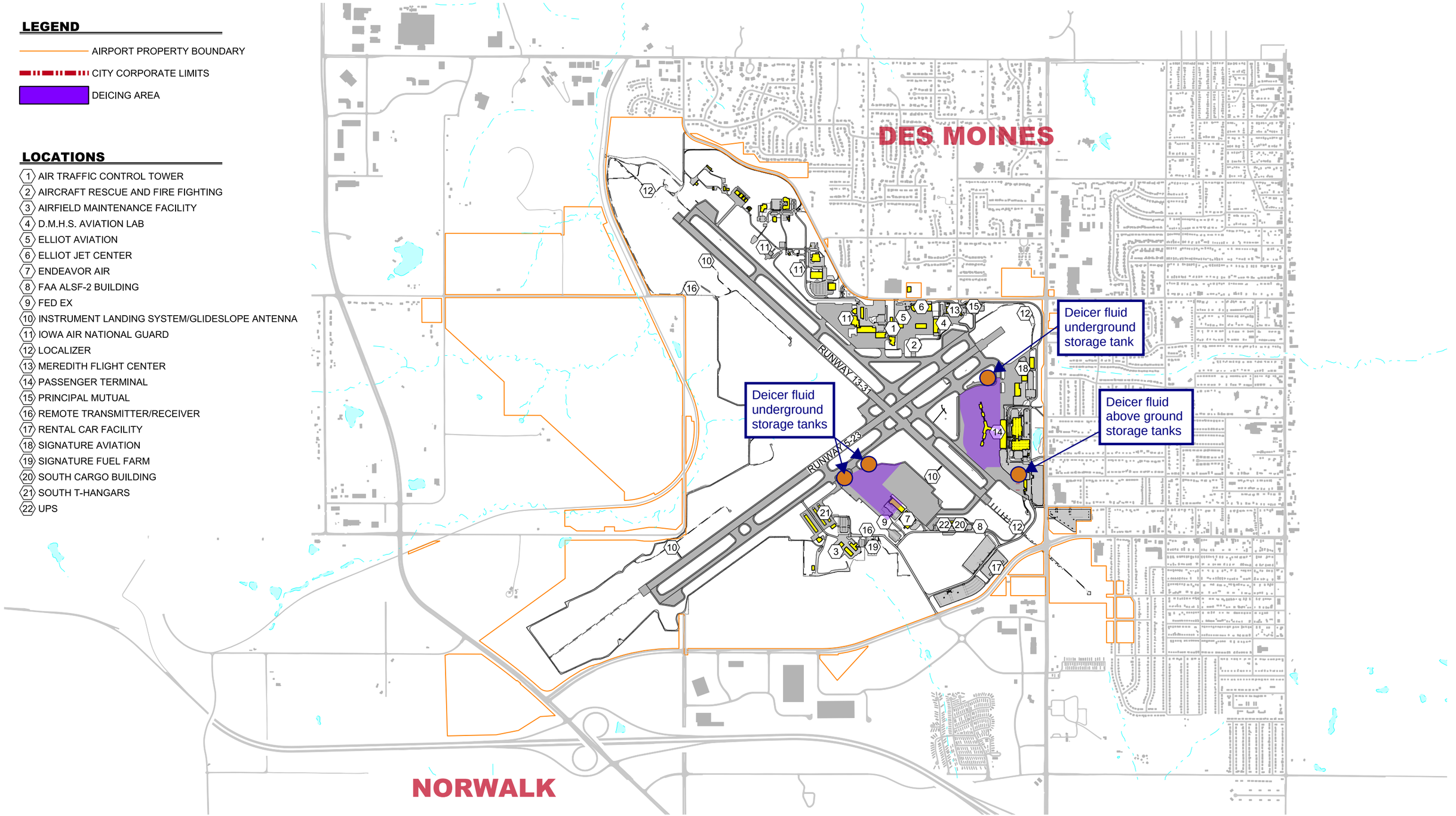
1/30/2020 c:\pw_workdir\pw_jei\vd_pmk1\d03295142019_SWPPP Update.dgn

## LEGEND

- AIRPORT PROPERTY BOUNDARY
- CITY CORPORATE LIMITS
- DEICING AREA

## LOCATIONS

1. AIR TRAFFIC CONTROL TOWER
2. AIRCRAFT RESCUE AND FIRE FIGHTING
3. AIRFIELD MAINTENANCE FACILITY
4. D.M.H.S. AVIATION LAB
5. ELLIOT AVIATION
6. ELLIOT JET CENTER
7. ENDEAVOR AIR
8. FAA ALSF-2 BUILDING
9. FED EX
10. INSTRUMENT LANDING SYSTEM/GLIDESLOPE ANTENNA
11. IOWA AIR NATIONAL GUARD
12. LOCALIZER
13. MEREDITH FLIGHT CENTER
14. PASSENGER TERMINAL
15. PRINCIPAL MUTUAL
16. REMOTE TRANSMITTER/RECEIVER
17. RENTAL CAR FACILITY
18. SIGNATURE AVIATION
19. SIGNATURE FUEL FARM
20. SOUTH CARGO BUILDING
21. SOUTH T-HANGARS
22. UPS




DES MOINES International Airport

# STORM WATER POLLUTION PREVENTION PLAN
# PRIMARY AIRCRAFT DEICING AREAS

2000 0 1000 2000 4000

SCALE: 1"= 2000'

Coordinate System: NAD 1983 StatePlane Iowa South FIPS 1402 Feet
Datum: North American Datum 1983
Ellipsoid: GRS 1980

| | |
|---|---|
| DRAWN: | MJS |
| CHECKED: | BMB |
| DATE: | 1/30/2020 |
| FILE: | 14-E029 |

Fig. 4

1/30/2020 c:\pw_workdir\pw_ie\fvd_pmk1v\d03295142019_SWPPP Update.dgn

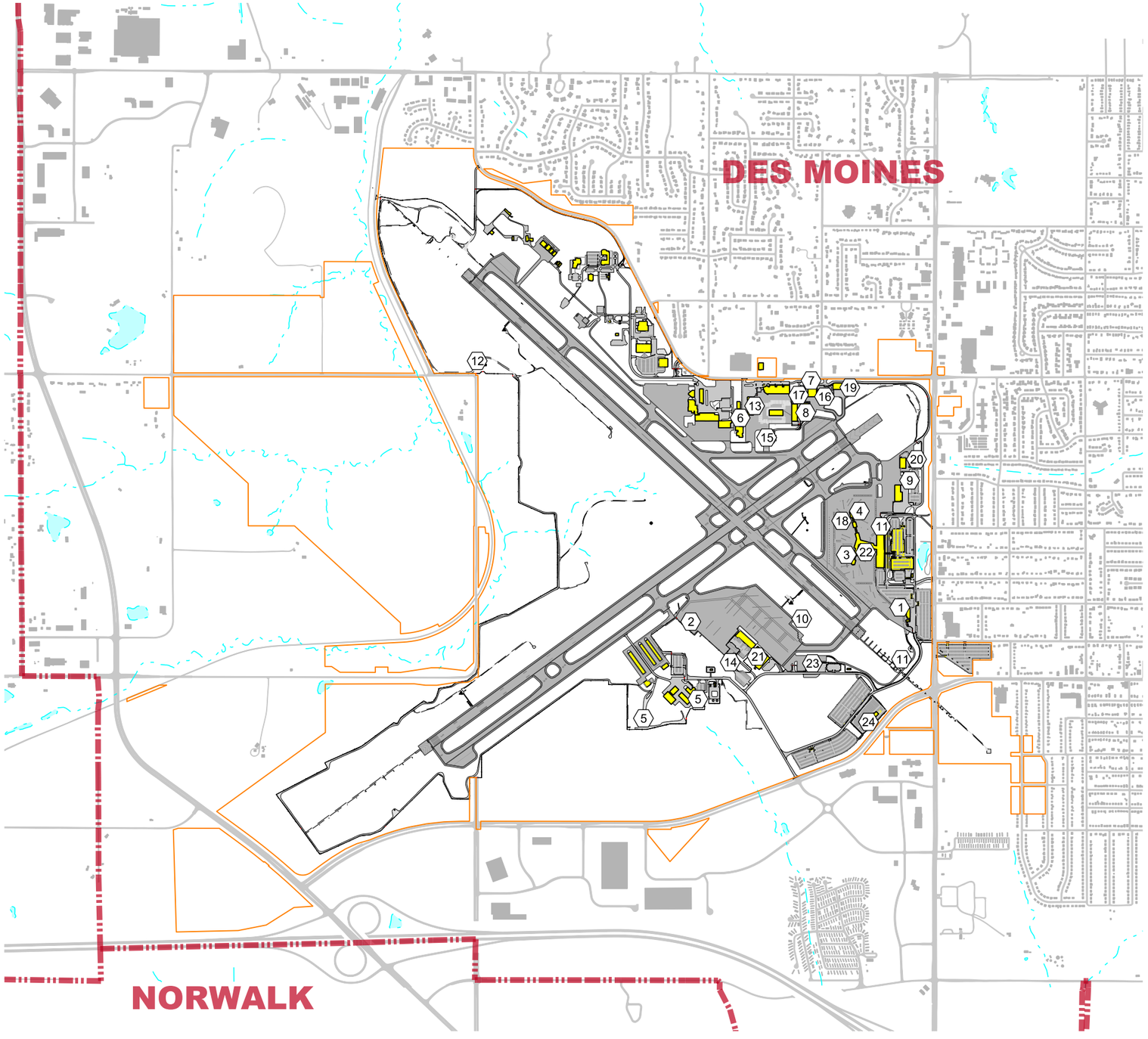
## LEGEND

AIRPORT PROPERTY BOUNDARY

CITY CORPORATE LIMITS

## CHEMICAL STORAGE LOCATIONS

| | | |
|---|---|---|
| 1 | EAST CARGO | CONSOLIDATED GLYCOL STORAGE |
| 2 | SOUTH CARGO | CONSOLIDATED GLYCOL STORAGE |
| 3 | SOUTHWEST | OIL AND GREASE, PETROLEUM HYDROCARBONS |
| 4 | AMERICAN EAGLE | OIL AND GREASE |
| 5 | DSM AIRPORT AUTHORITY | OIL AND GREASE, SODIUM CHLORIDE, POTASSIUM ACETATE, SODIUM ACETATE |
| 6 | DSM AIR TRAFFIC CONTROL TOWER | OIL AND GREASE, PETROLEUM HYDROCARBONS, ACID WASTE |
| 7 | DSM AIRPORT SURVEILLANCE RADAR | OIL AND GREASE, PETROLEUM HYDROCARBONS |
| 8 | DES MOINES CENTRAL CAMPUS AVIATION DEPT. | OIL AND GREASE |
| 9 | DES MOINES FLYING SERVICE, INC. | OIL AND GREASE, PETROLEUM HYDROCARBONS |
| 10 | RUNWAY 31R GLIDESLOPE | OIL AND GREASE, PETROLEUM HYDROCARBONS |
| 11 | RUNWAY 31R LOCALIZER | OIL AND GREASE, PETROLEUM HYDROCARBONS |
| 12 | REMOTE TRANSMITTER/RECEIVER | OIL AND GREASE, PETROLEUM HYDROCARBONS |
| 13 | ELLIOTT AVIATION | OIL AND GREASE, PETROLEUM HYDROCARBONS |
| 14 | FEDERAL EXPRESS | OIL AND GREASE, PETROLEUM HYDROCARBONS |
| 15 | FIREFIGHTING | AFFF |
| 16 | MEREDITH CORPORATION | OIL AND GREASE, PETROLEUM HYDROCARBONS |
| 17 | ELLIOT JET CENTER | OIL AND GREASE, PETROLEUM HYDROCARBONS, NON-HALOGENATED SOLVENTS |
| 18 | DELTA | OIL AND GREASE, PETROLEUM HYDROCARBONS |
| 19 | PRINCIPAL FINANCIAL GROUP AVIATION | OIL AND GREASE, PETROLEUM HYDROCARBONS, NICKEL |
| 20 | SIGNATURE FLIGHT SUPPORT | OIL AND GREASE, PETROLEUM HYDROCARBONS, AFFF |
| 21 | ENDEAVOR AIR MAINTENANCE | OIL AND GREASE, PETROLEUM HYDROCARBONS, AFFF, SOLVENTS |
| 22 | UNITED AIRLINES | OIL AND GREASE |
| 23 | UNITED PARCEL SERVICE | OIL AND GREASE, PETROLEUM HYDROCARBONS |
| 24 | RENTAL CAR FACILITY | OIL AND GREASE |




DES MOINES International Airport

# STORM WATER POLLUTION PREVENTION PLAN
# CHEMICAL STORAGE LOCATIONS

2000 0 1000 2000 4000

SCALE: 1"= 2000'

Coordinate System: NAD 1983 StatePlane Iowa South FIPS 1402 Feet
Datum: North American Datum 1983
Ellipsoid: GRS 1980

| | |
|---|---|
| DRAWN: | MJS |
| CHECKED: | BMB |
| DATE: | 1/30/2020 |
| FILE: | 17-E006 |

Fig. 5

1/30/2020 c:\pw_work\dfripw_ielfvd_pmk1\d03295142019_SWPPP Update.dgn

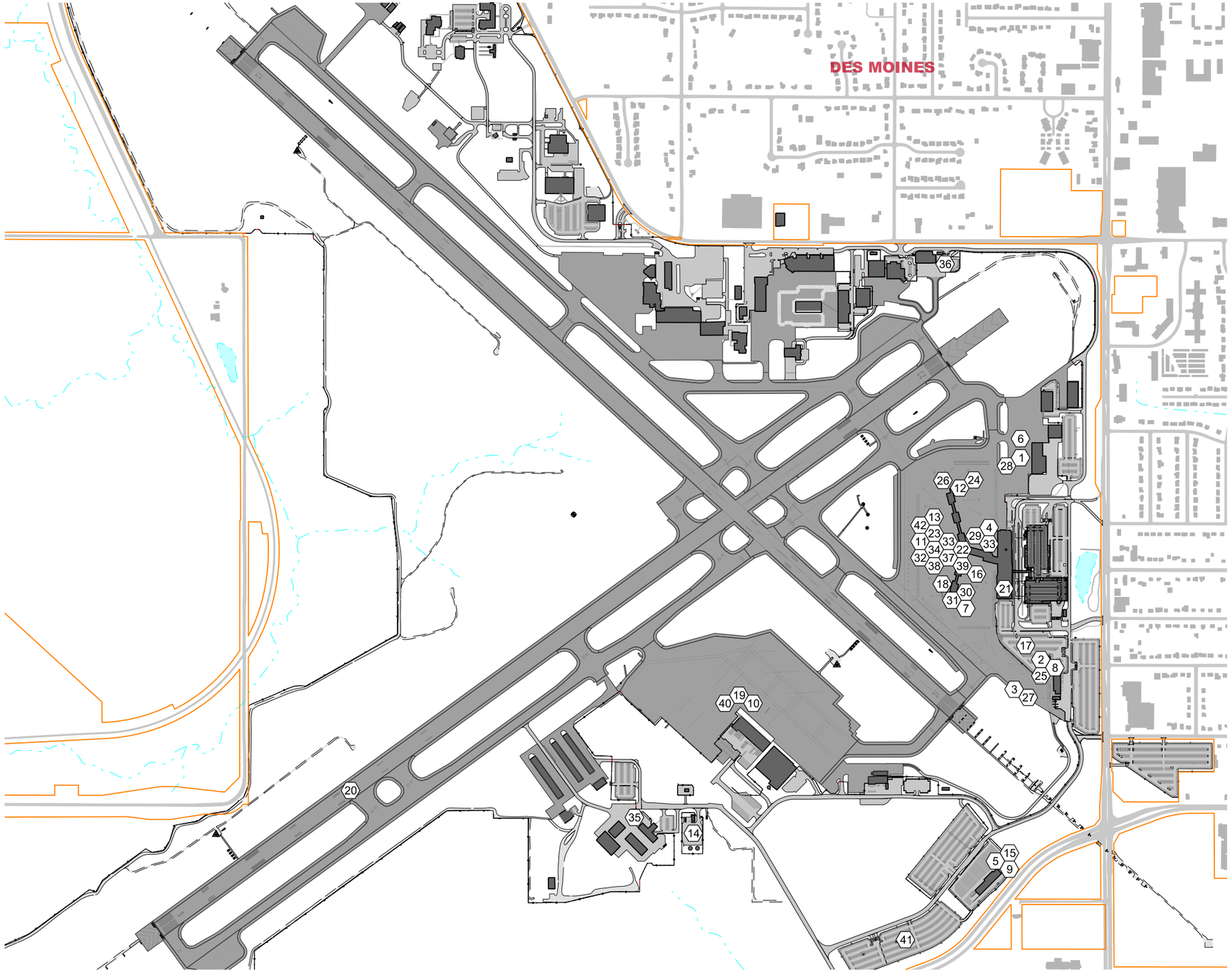
## LEGEND

AIRPORT PROPERTY BOUNDARY

CITY CORPORATE LIMITS

## SPILL LOCATIONS

| | COMPANY | DATE | TYPE |
|---|---|---|---|
| 1 | FLEXJET | 1/14/2014 | JET FUEL |
| 2 | DELTA | 2/25/2014 | GLYCOL |
| 3 | AMERICAN AIRLINES | 2/26/2014 | GLYCOL |
| 4 | DELTA AIRLINES | 9/16/2014 | GLYCOL |
| 5 | HERTZ | 10/13/2014 | JET FUEL |
| 6 | SIGNATURE FLIGHT SUPPORT | 11/25/2014 | JET FUEL |
| 7 | UNITED AIRLINES | 12/3/2014 | GLYCOL |
| 8 | DELTA AIRLINES | 1/12/2015 | GLYCOL |
| 9 | HERTZ | 2/18/2015 | FUEL |
| 10 | UNITED PARCEL SERVICE | 2/25/2015 | GLYCOL |
| 11 | SIGNATURE FLIGHT SUPPORT | 4/16/2015 | JET FUEL |
| 12 | SIGNATURE FLIGHT SUPPORT | 6/23/2015 | JET FUEL |
| 13 | SIGNATURE FLIGHT SUPPORT | 7/1/2015 | JET FUEL |
| 14 | SIGNATURE FLIGHT SUPPORT | 12/1/2015 | JET FUEL |
| 15 | HERTZ | 3/20/2016 | FUEL |
| 16 | SIGNATURE FLIGHT SUPPORT | 8/16/2016 | JET FUEL |
| 17 | ABM | 10/31/2016 | DIESEL FUEL |
| 18 | SIGNATURE FLIGHT SUPPORT | 8/11/2017 | JET FUEL |
| 19 | UPS | 8/25/2017 | JET FUEL |
| 20 | DMAA | 10/24/2017 | DIESEL FUEL |
| 21 | DMAA | 4/30/2018 | SEWAGE |
| 22 | DMAA | 5/1/2018 | SEWAGE |
| 23 | UNKNOWN | 5/8/2018 | LAVATORY WASTE |
| 24 | SIGNATURE FLIGHT SUPPORT | 7/10/2018 | AVGAS |
| 25 | UNITED AIRLINES | 8/9/2018 | GLYCOL |
| 26 | SIGNATURE FLIGHT SUPPORT | 9/15/2018 | JET FUEL |
| 27 | DGS | 11/12/2018 | GLYCOL |
| 28 | SIGNATURE FLIGHT SUPPORT | 2/18/2019 | GLYCOL |
| 29 | DGS | 2/24/2019 | GLYCOL |
| 30 | UNITED AIRLINES | 4/14/2019 | LAVATORY WASTE |
| 31 | UNITED AIRLINES | 4/23/2019 | LAVATORY WASTE |
| 32 | SIGNATURE FLIGHT SUPPORT | 6/8/2019 | JET FUEL |
| 33 | AMERICAN AIRLINES | 6/20/2019 | LAVATORY WASTE |
| 34 | ENVOY | 6/28/2019 | LAVATORY WASTE |
| 35 | DMAA | 7/12/2019 | OIL |
| 36 | MEREDITH | 7/27/2019 | JET FUEL |
| 37 | UNKNOWN | 7/31/2019 | LAVATORY WASTE |
| 38 | ENVOY | 8/3/2019 | LAVATORY WASTE |
| 39 | DELTA AIRLINES | 8/19/2019 | LAVATORY WASTE |
| 40 | FEDEX | 9/14/2019 | JET FUEL |
| 41 | UNITED AIRLINES | 9/16/2019 | HYDRAULIC FLUID |
| 42 | DELTA AIRLINES | 9/28/2019 | LAVATORY WASTE |




DES MOINES International Airport

# STORM WATER POLLUTION PREVENTION PLAN 2014-2019 SPILL LOCATIONS

1000 0 500 1000 2000

SCALE: 1"= 1000'

Coordinate System: NAD 1983 StatePlane Iowa South FIPS 1402 Feet
Datum: North American Datum 1983
Ellipsoid: GRS 1980

| | |
|---|---|
| DRAWN: | MJS |
| CHECKED: | BMB |
| DATE: | 1/31/2020 |
| FILE: | 17-E006 |

Fig. 6

1/31/2020 c:\pw_workdir\pw_ie\fvd_pmk1v803295142019_SWPPP Update.dgn

# Appendix A

## Permits

**IOWA DEPARTMENT OF NATURAL RESOURCES**

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT**

**PERMITTEE**

Des Moines International Airport
5800 Fleur Drive
Des Moines, Iowa 50321-2854

**IDENTITY AND LOCATION OF FACILITY**

Des Moines International Airport
5800 Fleur Drive
Des Moines, Iowa 50321-2854

**IOWA NPDES PERMIT NUMBER:** 77-27-0-08

**RECEIVING WATERCOURSES**
Yeader Creek, Frink Creek, Middle Creek

**DATE OF ISSUANCE:** May 1, 2017

**DATE OF EXPIRATION:** April 30, 2022

**YOU ARE REQUIRED TO FILE**
**FOR RENEWAL OF THIS PERMIT BY:** November 1, 2021

**EPA NUMBER** - IA0075931

This permit is issued pursuant to the authority of section 402(b) of the Clean Water Act (33 U.S.C. 1342(b)), Iowa Code section 455B.174, and rule 567--64.13, Iowa Administrative Code. You are authorized to operate the disposal system and to discharge the pollutants specified in this permit in accordance with the monitoring requirements and other terms set forth in this permit.

You may appeal any conditions of this permit by filing written notice of appeal and request for administrative hearing with the director of this department within 30 days of receipt of this permit.

Any existing, unexpired Iowa operation permit or Iowa NPDES permit previously issued by the department for the facility identified above is revoked by the issuance of this Iowa NPDES operation permit.

FOR THE DEPARTMENT OF NATURAL RESOURCES

By _____
Joe Griffin
NPDES Section
Environmental Protection Division

# PART I. DESCRIPTION OF DISCHARGES COVERED UNDER THIS PERMIT

## A. APPLICABILITY

1. Individual Responsibilities The Des Moines Airport Authority, as owner and operator of the Des Moines International Airport, shall act as the airport representative and shall coordinate co-permittee efforts to achieve permit compliance. In enforcing the terms of this permit, the Department may deal solely with the Des Moines Airport Authority and is not required to apportion or assign responsibility or liability to one or more other co-permittees. The Des Moines Airport Authority and each airport co-permittee is individually responsible for:

   a. Compliance with permit conditions relating to discharges from the separate storm sewer system where it is the operator.

   b. Storm water pollution plan implementation on portions of the separate storm sewer system where it is the operator.

   c. Collection of monitoring data required in Part V. Agreements may be established between co-permittees to consolidate monitoring responsibilities.

   d. Compliance with reporting requirements as specified in Part V, relating to the portions of the airport's separate storm sewer system for which they are responsible. Agreements may be established between co-permittees to consolidate reporting responsibilities.

2. Joint Responsibilities Co-permittees are jointly responsible for permit compliance on those shared portions of the separate storm sewer system where one or more co-permittees jointly discharge to or operate at a portion of the separate storm sewer system.

3. Airport tenants or operators with industrial activities associated with commercial air transportation at the Des Moines International Airport are co-permittees with the Des Moines Airport Authority and are regulated under this permit except as otherwise indicated in this permit. The airport co-permittee list is subject to change as noted below. An Airport tenant or operator may be a co-permittee if they meet the criteria in Part I.B. below.

4. Change in Co-Permittee Status The Des Moines Airport Authority shall promptly notify the Department when it becomes aware of a change in co-permittee status which could require a tenant or business to become a co-permittee (or otherwise obtain an individual permit) or to be deleted from the co-permittee list, by submitting information about the change to the Department. Tenants or operators required to be permitted under paragraph a. or b. below shall submit to the Department through the Des Moines Airport Authority an NPDES certification that specifies the date the new co-permittee proposes to initiate operations and thereby assume responsibility for compliance with the permit and liability for violations of the permit. The following situations require that the Des Moines Airport Authority notify the Department:

   a. A new tenant or operator begins operating at the airport and meets the permitting criteria.

   b. An existing tenant or operator is operating at the airport, meets the permitting criteria, and has not been identified on the airport co-permittee list.

   c. A co-permittee changes their name from what is currently on the airport co-permittee list.

   d. A co-permittee discontinues their activities and no longer operates at the airport.

   e. A co-permittee who is identified on the airport co-permittee list no longer meets the permitting criteria.

5. Maximum Extent Practicable Co-permittees shall develop and implement a storm water pollution prevention plan and best management practices designed to limit to the maximum extent practicable the discharge of pollutants from the separate storm sewer system and designed to meet all numeric effluent limits.

6. Program Resources The co-permittees shall provide adequate finances, staff, equipment, and support capabilities to implement their storm water pollution prevention plan and meet the requirements of this permit.

**B.** DISCHARGE(S) COVERED UNDER THIS PERMIT

Storm water discharges associated with industrial activity from vehicle maintenance areas, equipment cleaning areas, or deicing/anti-icing areas located at the Facility except for those areas controlled by the Iowa Air National Guard.

- This permit shall apply to storm water discharges from the Facility in which vehicle maintenance shops, material handling facilities, equipment cleaning operations or airport and/or aircraft deicing/anti-icing operations are located.

- Only those portions of the Facility that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, or deicing/anti-icing operations are addressed under this permit.

**C.** STORM WATER DISCHARGE NOT ASSOCIATED WITH INDUSTRIAL ACTIVITY

Storm water discharge associated with industrial activity authorized by this permit may be combined with other sources of storm water that are not classified as associated with industrial activity pursuant to 40 CFR 122.26(b)(14).

**D.** LIMITATION ON COVERAGE

Unless specifically identified in Part I. B of this permit, the following discharges are not authorized by this permit:

- non-storm water discharges except those listed in Part I.E. of this permit,

- non-storm water discharges including aircraft, ground vehicle, runway and equipment wash waters,

- dry weather discharges of deicing/anti-icing chemicals are not authorized by this permit.

- the discharge of hazardous substances or oil resulting from an on-site spill; and,

- storm water discharge associated with industrial activity from construction activity in which one or more acres of land is disturbed.

**E.** NON-STORM WATER DISCHARGES

The following non-storm water discharges may be authorized by this permit provided the non-storm water component of the discharge is in compliance with the conditions in Part III.A.3.i. and the pollution prevention plan of this permit:

discharges from fire fighting activities; fire hydrant flushing; potable water sources including waterline flushing; drinking fountain water, uncontaminated compressor condensate, irrigation drainage; lawn watering; routine external building wash down that does not use detergents or other compounds; pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents or other compounds are not used; air conditioning condensate; compressor condensate; uncontaminated springs; uncontaminated ground water; and foundation or footing drains where flows are not contaminated with process materials such as solvents.

## PART II. SPECIAL CONDITIONS

**A.** ADDITIONAL REQUIREMENTS FOR SALT STORAGE

Storage piles of salt used for deicing or other commercial or industrial purposes and that generate a storm water discharge to waters of the State shall be enclosed or covered to prevent exposure to precipitation, except for exposure resulting from adding or removing materials from the pile.

**B.** RELEASES OF REPORTABLE QUANTITIES OF HAZARDOUS SUBSTANCES AND OIL

The co-permittees are required to report spills which equal or exceed the reportable quantity levels specified in 40 CFR 110, 117, and 302.

## C. DISCHARGE OF STORM WATER CONTAMINATED WITH GLYCOL BASED DEICING AND ANTI-ICING COMPOUNDS

The permittee is required to discharge the maximum possible amount of glycol contaminated storm water to the sanitary sewer allowed by any agreement between the Des Moines International Airport and the Des Moines Metropolitan Wastewater Reclamation Authority before any discharge of glycol or products of decomposition of glycol is made, either directly or indirectly, to Frink Creek, Yeader Creek, Middle Creek or any other Water of the State or its tributaries. No discharge of glycol or products of decomposition of glycol, directly or indirectly, to Frink Creek, Yeader Creek, Middle Creek or any other Water of the United State or their tributaries shall be made if it is possible for the said storm water to instead be discharged to the Des Moines Wastewater Reclamation Facility.

The permittee is required to discharge at a rate of 500 gallons/minute of glycol contaminated storm water or storm water contaminated with the products of decomposition of glycol to the sanitary sewer (Des Moines Metropolitan Wastewater Reclamation Authority) and at 15,000 lbs/day of chemical oxygen demand (COD) before any discharge of glycol contaminated storm water or storm water contaminated with the products of decomposition of glycol is made, either directly or indirectly, to any Water of the State from outfall 001 or the area where deicing and anti-icing activities are conducted which drains to outfall 001. The permittee is required to discharge at a rate of 300 gallons/minute of glycol contaminated storm water or storm water contaminated with the products of decomposition of glycol to the sanitary sewer (Des Moines Metropolitan Wastewater Reclamation Authority) up to 15,000 lbs/day of chemical oxygen demand (COD) before any discharge of glycol contaminated storm water or storm water contaminated with the products of decomposition of glycol is made, either directly or indirectly, to any Water of the State from outfall 003 or the area where de-icing and anti-icing activities are conducted which drains to outfall 003.

No discharge of glycol contaminated storm water or storm water contaminated with the products of decomposition of glycol, directly or indirectly, to any waters of the State or their tributaries, including groundwater, shall be made from outfall 001, outfall 003 or the areas where de-icing and anti-icing activities are conducted which drain to outfalls 001 or outfall 003 if it is possible for said storm water to instead be discharged to the sanitary sewer.

Direct discharges from deicing/anti-icing activities are not allowed other than through outfalls 001 and 003. Small amounts of deicing/anti-icing products that drip from aircraft after they are moved from designated deicing/anti-icing areas (known as fugitive glycol) are not considered direct discharges for the purposes of this paragraph.

It is the intent of this permit to require the permittee to discharge glycol contaminated storm water and storm water contaminated with the products of decomposition of glycol to the sanitary sewer on a daily basis from flows that would otherwise be discharged from outfall 001 at a rate of 500 gallons/minute up to 15,000 lbs/day of COD until there is no glycol contaminated storm water or storm water contaminated with the products of decomposition of glycol in the detention tank from which outfall 001 discharges. It is the intent of this permit to require the permittee to discharge glycol contaminated storm water and storm water contaminated with the products of decomposition of glycol to the sanitary sewer on a daily basis from flows that would otherwise be discharged from outfall 003 at a rate of 300 gallons/minute up to 15,000 lbs/day of COD until there is no glycol contaminated storm water or storm water contaminated with the products of decomposition of glycol in the detention tanks from which outfall 003 discharges.

Discharging glycol contaminated storm water or storm water contaminated with the products of decomposition of glycol to waters of the State from outfall 001 and outfall 003 is a violation of this permit unless the permittee has been diligent in its attempts to discharge at least the amounts of glycol contaminated storm water and storm water contaminated with the products of decomposition of glycol described in Part II.C. of this permit to the sanitary sewer and to otherwise minimize the amount of storm water discharged to waters of the State from outfall 001 and outfall 003.

Should a discharge from outfall 001 or outfall 003 occur during a time when such discharge is prohibited by this permit, the permittee shall notify the Department at its Field Office no. 5. The notification shall be no later than the same business day the discharge is discovered if the discharge is discovered on a business day prior to 4:30 p.m. and no later than noon of the next business day if the discharge is discovered at any other time. The permittee shall be diligent in its attempts to determine when discharges from outfall 001 and outfall 003 are occurring from deicing and anti-icing activities.

Discharges to waters of the State from outfalls 001 and 003 that exceed the effluent limitations in this permit are violations of this permit regardless of the amount of storm water discharged to the sanitary sewer or other measures implemented by the permittee.

Flows from deicing and anti-icing operations shall always be piped either directly to the sanitary sewer or first to a detention tank then to the sanitary sewer or be otherwise transported there. The runoff from these operations shall not be allowed to flow through any ditches or waterways except for ditches constructed for the purpose of conveying these flows to an underground conveyance system.

No processes stipulated in this permit shall be changed without a permit amendment being issued by the Department.

**D.** USE OF GLYCOL BASED AND OTHER DEICING AND ANTI-ICING COMPOUNDS

Both the use at the Facility and the discharge from the Facility of glycol based deicing or anti-icing compounds of the type known in the trade as "Type II" is prohibited. The use at the facility of urea is prohibited. The application of deicing and anti-icing fluids to aircraft is prohibited except in the area(s) which drain(s), are piped or otherwise transported to a detention basin the contents of which are then pumped to the Des Moines Metropolitan Wastewater Reclamation Authority wastewater treatment facility or, if that is not possible, to outfall 001 or outfall 003, or which are otherwise deposited directly into the Des Moines wastewater treatment system.

## PART III. STORM WATER POLLUTION PREVENTION PLAN

A storm water pollution prevention plan shall be maintained. Storm water pollution prevention plans developed for areas of the Facility occupied by co-permittees shall be integrated with the plan for the entire airport. For the purposes of this permit, co-permittees of the Facility include airline companies, fixed based operators, and other parties which have contracts with the Facility to conduct business operations at the Facility which result in storm water discharges associated with industrial activity as described in Part I of this permit.

Storm water pollution prevention plans must be prepared in accordance with good engineering practices. The plan must identify potential sources of pollution that may reasonably be expected to affect the quality of storm water discharges associated with industrial activity from the Facility. In addition, the plan must describe and ensure the implementation of practices that are to be used to reduce the pollutants in storm water discharge associated with industrial activity at the Facility and to ensure compliance with the terms and conditions of this permit. The Facility must implement the provisions of the storm water pollution prevention plan required under this part as a condition of this permit.

**A.** CONTENTS OF POLLUTION PREVENTION PLAN

The plan shall include, at a minimum, the following items:

1. Pollution Prevention Team The plan shall identify a specific individual or individuals by position from each co-permittee as member(s) of a storm water Pollution Prevention Team who are responsible for developing the storm water pollution prevention plan and assisting the Facility management in its implementation, maintenance, and revision. The plan shall clearly identify the responsibilities of each team member. The activities and responsibilities of the team shall address all aspects of the Facility's storm water pollution prevention plan.

2. Description of Potential Pollutant Sources The plan shall provide a description of potential sources which may reasonably be expected to add significant amounts of pollutants to storm water discharges or which may result in the discharge of pollutants during dry weather from separate storm sewers draining the facility. The plan shall identify all activities and significant materials which may potentially be significant pollutant sources. The plan shall include, at a minimum:

   a. Drainage

      (1) A site map indicating an outline of the drainage area of each storm water outfall, each existing structural control measure to reduce pollutants in storm water runoff, surface water bodies, locations where significant materials are exposed to precipitation, locations where major spills or leaks identified under Part III.A.2.c.

(Spills and Leaks) of this section have occurred, and the locations of the following activities where such activities are exposed to precipitation: aircraft and runway deicing/anti-icing operations; fueling stations; aircraft, ground vehicle and equipment maintenance and/or cleaning areas; storage areas for aircraft, ground vehicles and equipment awaiting maintenance; loading/unloading areas; locations used for the treatment, storage or disposal of wastes, liquid storage tanks, processing areas and storage areas. The map must indicate the outfall locations and the types of discharges contained in the drainage areas of the outfalls.

(2) For each area of the Facility that generates storm water discharges associated with industrial activity with a reasonable potential for containing significant amounts of pollutants, a prediction of the direction of flow, and an identification of the types of pollutants which are likely to be present in storm water discharge associated with industrial activity. Factors to consider include the toxicity of chemical; quantity of chemicals used, produced or discharged; the likelihood of contact with storm water; and history of significant leaks or spills of toxic or hazardous pollutants. Flows with a significant potential for causing erosion shall be identified.

(3) The site map developed for the entire airport shall indicate the location of each co-permittee of the Facility that conducts industrial activities as described in Part I.A., and incorporate information from the tenants' and/or operators' site map (including a description of industrial activities, significant materials exposed, and existing management practices).

b. Inventory of Exposed Materials - An inventory of the types of materials handled at the site that potentially may be exposed to precipitation. Such inventory shall include a narrative description of "significant materials" that have been handled, treated, or disposed of in a manner to allow exposure to storm water beginning from 3 years prior to the issuance date of this permit, method and location of on-site storage or disposal; materials management practices employed to minimize contact of materials with storm water runoff beginning 3 years prior to the issuance date of this permit to the present; the location and a description of existing structural and nonstructural control measures to reduce pollutants in storm water runoff; and a description of any treatment the storm water receives.

c. Spills and Leaks - A list of any hazardous condition occurrence(s) at areas that are exposed to precipitation or that otherwise drain to a storm water conveyance at the Facility beginning 3 years prior to the issuance date of this permit. Such list shall be updated as appropriate during the term of the permit.

d. Sampling Data - A summary of any existing discharge sampling data describing pollutants in storm water collected beginning 3 years prior to the permit issuance date, including actual sampling data obtained for this permit, shall be included in the storm water pollution prevention plan. All sampling data shall be held for a period of at least 5 years.

e. Risk Identification and Summary of Potential Pollutant Sources - A narrative description of the potential pollutant sources from the following activities: aircraft, runway, ground vehicle and equipment maintenance and cleaning; aircraft and runway deicing/anti-icing operations (including apron and centralized aircraft deicing/anti-icing stations, runways, taxiways and ramps); outdoor storage activities; loading and unloading operations; and onsite waste disposal. The description shall specifically list any significant potential source of pollutants at the facility and for each potential source, any pollutant or pollutant parameter [e.g., biochemical oxygen demand ($BOD_5$), oil and grease, etc.] of concern shall be identified.

The Facility shall maintain a record of the types [including the Material Safety Data Sheets (MSDS)] and monthly estimated quantities and total annual quantities of deicing/anti-icing chemicals used. Co-permittees who conduct deicing/anti-icing operations shall provide the above information to the Facility for inclusion in the storm water pollution prevention plan for the entire facility.

3. Measures and Controls. Co-permittees covered by this permit shall develop a description of storm water management controls appropriate for their areas of operation, and implement such controls. The priority in selecting controls shall reflect identified potential sources of pollutants at the Facility. The description of storm water management controls shall address the following minimum components, including a schedule for implementing such controls:

a. Good Housekeeping - Good housekeeping requires the maintenance of areas which may contribute pollutants to storm water discharges in a clean, orderly manner.

(1) Aircraft, Ground Vehicle and Equipment Maintenance Areas - Co-permittees should ensure the maintenance of equipment is conducted in designated areas only and clearly identify these areas on the ground and delineate them on the site map(s). The plan must describe measures that prevent or minimize the contamination of the storm water runoff from all areas used for aircraft, ground vehicle and equipment maintenance (including the maintenance conducted on the terminal apron and in dedicated hangars). Management practices or equivalent measures such as performing maintenance activities indoors, maintaining an organized inventory of materials used in the maintenance areas, draining all parts of fluids prior to disposal, preventing the practice of hosing down the apron or hangar floor, using dry cleanup methods, and/or collecting the storm water runoff from the maintenance area and providing treatment or recycling should be considered.

(2) Aircraft, Ground Vehicle and Equipment Cleaning Areas - Permittees should ensure that cleaning of equipment is conducted in designated areas only and clearly identify these areas on the ground and delineate them on the site map. The plan must describe measures that prevent or minimize the contamination of the storm water runoff from all areas used for aircraft, ground vehicle and equipment cleaning. Management practices such as performing cleaning operations indoors, and/or collecting the storm water runoff from the cleaning area and providing treatment or recycling should be considered.

(3) Aircraft, Ground Vehicle and Equipment Storage Areas - The storage of aircraft, ground vehicles and equipment awaiting maintenance must be confined to designated areas (delineated on the site map). The plan must describe measures that prevent or minimize the contamination of the storm water runoff from these areas. Management practices such as indoor storage of aircraft and ground vehicles, the use of drip pans for the collection of fluid leaks, and perimeter drains, dikes or berms surrounding storage areas should be considered.

(4) Material Storage Areas - Storage units of all materials (e.g., used oils, hydraulic fluids, spent solvents, and waste aircraft fuel) must be maintained in good condition, so as to prevent or minimize contamination of storm water, and plainly labeled (e.g., "used oil," "Contaminated Jet A," etc.). The plan must describe measures that prevent or minimize contamination of the storm water runoff from storage areas. Management practices or equivalent measures such as indoor storage of materials, centralized storage areas for waste materials, and/or installation of berming and diking around storage areas should be considered for implementation.

(5) Airport Fuel System and Fueling Areas - The plan must describe measures that prevent or minimize the discharge of fuels to the storm sewer resulting from fuel servicing activities or other operations conducted in support of the airport fuel system. Where the discharge of fuels into the storm sewer cannot be prevented, the plan shall indicate measures that will be employed to prevent or minimize the discharge of the contaminated runoff into receiving surface waters. Management practices or equivalent measures such as implementing spill and overflow practices (e.g., placing absorbent materials beneath aircraft during fueling operations), using dry cleanup methods, and/or collecting the storm water runoff should be considered.

b. Preventive Maintenance - A preventive maintenance program shall involve timely inspection and maintenance of storm water management devices (e.g., cleaning oil/water separators, removing debris from catch basins) as well as inspecting and testing Facility equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters, and ensuring appropriate maintenance of such equipment and systems.

c. Spill Prevention and Response Procedures - Areas where potential spills which can contribute pollutants to storm water discharges can occur, and their accompanying drainage points shall be identified clearly in the storm water pollution prevention plan. The plan shall describe material handling procedures, storage requirements, and consider the use of equipment such as diversion valves. Procedures for cleaning up spills shall be identified in the plan and made available to the appropriate personnel. The necessary equipment to implement a cleanup should be available to personnel.

This permit does not relieve the co-permittees of the spill notification requirements as specified in 455B.386 of the Code of Iowa. Iowa law requires that as soon as possible but not less than six hours after the onset of a

"hazardous condition" the Department and the local sheriff's office, or the office of the sheriff of the affected county be notified.

d. Source Reduction - Co-permittees who conduct aircraft and/or runway (including taxiways and ramps) deicing/anti-icing operations shall evaluate the effectiveness of present operating procedures to consider alternative practices to reduce the overall amount of deicing/anti-icing chemicals used and/or lessen the environmental impact of the pollutant source without affecting proper deicing/anti-icing operations.

(1) With regard to runway deicing operations, co-permittees, at a minimum, shall evaluate: present application rates to ensure against excessive over application; metered application of deicing chemical; pre-wetting dry chemical constituents prior to application; installation of runway ice detection systems; implementing anti-icing operations as a preventive measure against ice buildup; the use of substitute deicing compounds such as potassium acetate in lieu of ethylene glycol, propylene glycol and/or urea.

(2) In considering source reduction management practices for aircraft deicing operations, co-permittees, at a minimum, should evaluate current application rates and practices to ensure against excessive over application, and consider pretreating aircraft with hot water prior to the application of a deicing chemical, thus reducing the overall amount of chemical used per operation.

Source reduction measures that the Facility determines to be reasonable and appropriate shall be implemented and maintained. The plan shall provide a narrative explanation of the options considered and the reasoning for whether or not to implement them.

e. Management of Runoff - The plan shall contain a narrative consideration of the appropriateness of traditional storm water management practices (practices other than those which prevent or reduce source(s) of pollutants) used to divert, infiltrate, reuse, or otherwise manage storm water runoff in a manner that reduces pollutants in storm water discharges from the site. The potential of various sources at the facility to contribute pollutants to storm water discharges associated with industrial activity [see paragraph XI.S.3.a.(2) (Description of Potential Pollutant Sources)] shall be considered. Appropriate measures or equivalent measures may include: vegetative swales, reuse of collected storm water (such as for a process or as an irrigation source), inlet controls (such as oil/water separators), snow management activities, infiltration devices, and wet detention/retention devices. Measures that the Facility determines to be reasonable and appropriate shall be implemented and maintained.

(1) Co-permittees that conduct aircraft and/or runway deicing/anti-icing operations shall also provide a narrative consideration of management practices to control or manage contaminated runoff from areas where deicing/anti-icing operations occur to reduce the amount of pollutants being discharged from the site. Structural controls such as establishing a centralized aircraft deicing facility, and/or collection of contaminated runoff for treatment or recycling should be considered. Collection and treatment alternatives include, but are not limited to, retention basins, detention basins with metered controlled release, Underground Storage Tanks (USTs) and/or disposal to Publicly Owned Treatment Works (POTW) by way of sanitary sewer or hauling tankers. Runoff management controls that the co-permittees determine to be reasonable and appropriate shall be implemented and maintained. The plan should consider the recovery of deicing/anti-icing materials when these materials are applied during non-precipitation events to prevent these materials from later becoming a source of storm water contamination. The plan shall provide a narrative explanation of the controls selected and the reasons for their selection.

f. Inspections - In addition to or as part of the comprehensive site evaluation required under Part III.A.4. of this permit, qualified co-permittee personnel shall be identified to inspect designated equipment and areas of the facility specified in the plan. The inspection frequency shall be specified in the plan, but at a minimum be conducted once per week during deicing/anti-icing application periods for areas where deicing/anti-icing operations are being conducted. A set of tracking or follow-up procedures shall be used to ensure that appropriate actions are taken in response to the inspections. Records of inspections shall be maintained. The use of a checklist developed by the pollution prevention team is encouraged.

g. Pollution Prevention Training - Pollution prevention training programs shall be developed to inform management and personnel responsible for implementing activities identified in the storm water pollution

prevention plan of the components and goals of the plan. Training should address topics such as spill response, good housekeeping, aircraft and runway deicing/anti-icing procedures, and material management practices. The pollution prevention plan shall identify periodic dates for such training.

h. Recordkeeping and Internal Reporting Procedures - A description of incidents (such as spills, or other discharges), along with other information describing the quality and quantity of storm water discharges shall be included in the plan. Inspections and maintenance activities shall be documented and records shall be incorporated into the plan.

i. Non-storm Water Discharges

(1) The plan shall include a certification that the storm water discharge points have been tested or evaluated for the presence of non-storm water discharges. The certification shall include the identification of potential significant sources of non-storm water at the site, a description of the results of any test and/or evaluation for the presence of non-storm water discharges, the evaluation criteria or testing method used, the date of any testing and/or evaluation, and the onsite drainage points that were directly observed during the test. Certifications shall be signed in accordance with Part VII.E. of this permit.

(2) Except for flows from fire fighting activities including vehicle system tests of Aircraft Rescue and Fire Fighting (ARFF), other sources of non-storm water listed in Part I.D. (Non-storm Water Discharges) of this permit that are combined with storm water discharges associated with industrial activity must be identified in the plan. The plan shall identify and ensure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge.

(3) Failure to Certify - If the Facility is unable to provide the required certification (testing for non-storm water discharges), the Department must be notified within 180 days after issuance date of this permit. If the failure to certify is caused by the inability to perform adequate tests or evaluations, such notification shall describe: the procedure of any test conducted for the presence of non-storm water discharges; the results of such test or other relevant observations; potential sources of non-storm water discharges to the storm water disposal systems and why adequate tests for such storm water disposal systems were not feasible. Non-storm water discharges to waters of the State which are not authorized by an NPDES permit are unlawful, and must be terminated.

j. Sediment and Erosion Control - The plan shall identify areas which, due to topography, activities, or other factors, have a high potential for significant soil erosion, and identify structural, vegetative, and/or stabilization measures to be used to limit erosion.

4. Comprehensive Site Compliance Evaluation Qualified Facility personnel shall conduct site compliance evaluations during periods of deicing/anti-icing operations at appropriate intervals specified in the plan, but in no case less than once a year. Such evaluations shall provide:

a. Areas contributing to a storm water discharge associated with industrial activity shall be visually inspected for evidence of, or the potential for, pollutants entering the drainage system. Measures to reduce pollutant loadings shall be evaluated to determine whether they are adequate and properly implemented in accordance with the terms of the permit or whether additional control measures are needed. Structural storm water management measures, sediment and erosion control measures, and other structural pollution prevention measures identified in the plan shall be observed to ensure that they are operating correctly. A visual inspection of equipment needed to implement the plan, such as spill response equipment, shall be made.

b. Based on the results of the evaluation, the description of potential pollutant sources identified in the plan in accordance with Part III.A.2 of this permit (Description of Potential Pollutant Sources) and pollution prevention measures and controls identified in the plan in accordance with Part III.A.3. of this permit (Measures and Controls) shall be revised as appropriate within 30 days of such evaluation and shall provide for implementation of any changes to the plan in a timely manner, but in no case more than 180 days after the evaluation.

c. A report summarizing the scope of the evaluation, personnel making the evaluation, the date(s) of the evaluation, major observations relating to the implementation of the storm water pollution prevention plan, and

actions taken in accordance with Part III.A.4.b (above) of the permit shall be made and retained as part of the storm water pollution prevention plan for at least 3 years from the date of the evaluation. The report shall identify any incidents of noncompliance. Where a report does not identify any incidents of noncompliance, the report shall contain a certification that the facility is in compliance with the storm water pollution prevention plan and this permit. The report shall be signed in accordance with Part VII.E. (Signatory Requirements) of this permit.

d. Where compliance evaluation schedules overlap with inspections, the compliance evaluation may be conducted in place of one such inspection.

**B.** ADDITIONAL POLLUTION PREVENTION PLAN REQUIREMENTS

In addition to the previously specified contents of the pollution prevention plan, the storm water pollution prevention plan shall include a complete discussion of measures taken to conform with the following as applicable guidelines:

The Facility must comply with applicable requirements in the municipal storm water management program developed under the NPDES permit issued to the City of Des Moines to operate its wastewater treatment facility.

**C.** SIGNATURE AND PLAN REVIEW

1. Signature / Location The plan shall be signed in accordance with the specifications outlined under Part VII. E. - Signatory Requirements of this permit. The plan shall be retained on-site at the Facility that generates the storm water discharge in accordance with Part V.C. Retention of Records of this permit.

2. Availability The Facility shall make the storm water pollution prevention plan, annual site compliance inspection report, Comprehensive Site Compliance Evaluation Reports, or other information available upon request to the Department.

3. Required Modifications The Department may notify the co-permittees at any time that the plan does not meet one or more of the minimum requirements of this part. Such notification shall identify those provisions of the permit that are not being met by the plan, and identify which provisions of the plan require modification in order to meet the minimum requirements of this part. Within 120 days of such notification from the Department, (or as otherwise provided by the Department), the co-permittees shall make the required changes to the plan and shall submit to the Department a written certification that the requested changes have been made.

**D.** KEEPING PLANS CURRENT

1. The co-permittees shall amend the plan whenever there is a change in design, construction, operation, or maintenance, that has a significant effect on the potential for the discharge of pollutants to the waters of the State or if the storm water pollution prevention plan proves to be ineffective in eliminating or significantly minimizing the discharge of pollutants from sources identified under Part III. A. 2. of this permit, or in otherwise achieving the general objectives of controlling pollutants in storm water discharges associated with industrial activity. New owners shall review the existing plan and make appropriate changes.

2. The storm water pollution prevention plan required by this permit must be modified within 14 calendar days of the occurrence of any "hazardous condition" to: provide a description of the release, the circumstances leading to the release, and the date of the release. In addition, within 60 days of the occurrence of the "hazardous condition" the plan must be reviewed by the co-permittees and a written report submitted to the Department in which measures to prevent the reoccurrence of such a condition are identified and what changes, if any, are to be made to the plan. The plan shall then be modified within 120 days of the occurrence of the "hazardous condition" with the measures identified in the report if the Department finds the measures adequate. A written certification that the changes identified in the report have been made shall also be submitted to the Department by the co-permittees within 120 days of the occurrence of the "hazardous condition". If the measures are found to be inadequate by the Department the co-permittees shall modify the plan within 120 days of notification by the Department of the inadequacy of the measures with changes acceptable to the Department.

**E.** SIGNATORY REQUIREMENTS

The storm water pollution prevention plan shall be certified in accordance with the Signatory Requirements Part VII. E. of this permit.

## PART IV. EFFLUENT LIMITATIONS

The following effluent limits are imposed.

Outfall 001 consisting of storm water discharges directly or indirectly to Yeader Creek:

| WASTEWATER PARAMETER | AMOUNT PER DAY | | CONCENTRATION | |
|---|---|---|---|---|
| | Average | Maximum | Average | Maximum |
| Oil and Grease | ----- | ----- | 10.0 mg/l | 15.0 mg/l |
| Ethylene Glycol | ----- | ----- | 125.0 mg/l | 185.0 mg/l |
| Propylene Glycol | ----- | ----- | 98.0 mg/l | 150.0 mg/l |
| pH | 6.5 to 9.0 | | | |

Limits for $CBOD_5$:

| MONTH | AMOUNT PER DAY | | CONCENTRATION | |
|---|---|---|---|---|
| | Average | Maximum | Average | Maximum |
| January | ----- | ----- | 100.0 mg/l | 150.0 mg/l |
| February | ----- | ----- | 100.0 mg/l | 150.0 mg/l |
| March | ----- | ----- | 100.0 mg/l | 150.0 mg/l |
| April | ----- | ----- | 100.0 mg/l | 150.0 mg/l |
| May | ----- | ----- | 100.0 mg/l | 140.0 mg/l |
| October | ----- | ----- | 100.0 mg/l | 150.0 mg/l |
| November | ----- | ----- | 100.0 mg/l | 150.0 mg/l |
| December | ----- | ----- | 100.0 mg/l | 150.0 mg/l |

A minimum dissolved oxygen concentration of 5.0 mg/l shall be maintained at all times from October 1 to May 31, during any other month glycol-based anti-icing or deicing compounds are used at the Facility, and during any other month glycol contaminated storm water is discharged to surface waters.

Monitoring shall be conducted and the point of compliance shall be immediately downstream of the culvert under Fleur Drive which lies at the head of Yeader Creek after the flows from both sides of the culvert have been thoroughly mixed with one another.

Outfall 002 consisting of storm water discharges directly or indirectly to Frink Creek:

| WASTEWATER PARAMETER | AMOUNT PER DAY | | CONCENTRATION | |
|---|---|---|---|---|
| | Average | Maximum | Average | Maximum |
| $CBOD_5$ | ----- | ----- | 100.0 mg/l | 150.0 mg/l |
| Oil and Grease | ----- | ----- | 10.0 mg/l | 15.0 mg/l |
| Ethylene Glycol | ----- | ----- | 185.0 mg/l | 185.0 mg/l |
| Propylene Glycol | ----- | ----- | 98.0 mg/l | 355.0 mg/l |
| pH | 6.5 to 9.0 | | | |

A minimum dissolved oxygen concentration of 5.0 mg/l shall be maintained at all times from October 1 to May 31, during any other month glycol-based anti-icing or deicing compounds are used at the Facility, and during any other month glycol contaminated storm water is discharged to surface waters.

Monitoring shall be conducted and the point of compliance shall be in the un-named tributary to Frink Creek immediately upstream of the point where this tributary joins Frink Creek immediately east of the point at which Frink Creek flows under S.W. 42nd St..

Outfall 003 consisting of storm water discharges directly or indirectly to Middle Creek:

| WASTEWATER PARAMETER | AMOUNT PER DAY | | CONCENTRATION | |
|---|---|---|---|---|
| | Average | Maximum | Average | Maximum |
| $CBOD_5$ | ----- | ----- | 100.0 mg/l | 150.0 mg/l |
| Oil and Grease | ----- | ----- | 10.0 mg/l | 15.0 mg/l |
| Ethylene Glycol | ----- | ----- | 185.0 mg/l | 185.0 mg/l |
| Propylene Glycol | ----- | ----- | 98.0 mg/l | 355.0 mg/l |
| pH | 6.5 to 9.0 | | | |

A minimum dissolved oxygen concentration of 5.0 mg/l shall be maintained at all times from October 1 to May 31, during any other month glycol-based anti-icing or deicing compounds are used at the Facility, and during any other month glycol or products of decomposition of glycol is discharged to surface waters.

Monitoring shall be conducted and the point of compliance shall be in the un-named tributary to Middle Creek located at the outlet of the storm water detention basin immediately north of Army Post Road and west of SW 28th St.

DEFINITIONS

1. "Average" means the sum of the total daily discharge by mass, volume or concentration during a calendar month divided by the total number of days during the month when the measurements were made.
2. "Maximum" means the sum of the total daily discharge mass, volume or concentration which cannot be exceeded during a twenty-four hour period.
3. "mg/l" means milligrams per liter.
4. "$CBOD_5$" means carbonaceous biochemical oxygen demand.
5. "$NH_3$-N" means ammonia-nitrogen.
6. "pH" means the negative of the base 10 logarithm of the hydronium ion concentration in moles per liter at $25^oC$.
7. "TSS" means total suspended solids.

## PART V. MONITORING AND REPORTING REQUIREMENTS

### A. MONITORING FREQUENCY

Analytical analyses must be performed by a laboratory certified by the State of Iowa to perform the analyses as specified in Chapter 567-83, Iowa Administrative Code. All analyses reported to the Department, with the exception of those that must be analyzed immediately must be analyzed using approved methods specified in 40 CFR 136.3. All collected samples shall comply with container requirements, preservation techniques and holding time requirements specified in 40 CFR 136.3.

The following monitoring frequencies are imposed:

| WASTEWATER PARAMETER | FREQUENCY | SAMPLE TYPE |
|---|---|---|
| Pumpage of glycol contaminated storm water to sanitary sewer | 1/day | 24-hour |
| storage basin level | 1/day | ----- |
| rainfall | 1/day | 24-hour |

The following monitoring frequencies during periods of discharge are imposed:

| WASTEWATER PARAMETER | FREQUENCY | SAMPLE TYPE |
|---|---|---|
| Total BETX (benzene, ethyl benzene, toluene, xylene) | 1/month | grab |
| Oil & Grease | 1/month | grab |

Total BETX and oil & grease shall be monitored 12 months/year.

Total BETX and oil & greases shall be monitored at three locations:

1. In the un-named tributary to Frink Creek immediately upstream of the point where this tributary joins Frink Creek immediately east of the point at which Frink Creek flows under SW 42nd St.
2. Immediately downstream of the culvert under Fleur Drive which lies at the head of Yeader Creek after the flows from both sides of the culvert have been thoroughly mixed with one another.
3. In the un-named tributary to Middle Creek located at the outlet of the storm water detention basin immediately north of Army Post Road and west of SW 28th Ct.

Outfall 001 storm water discharges contaminated with glycol based deicing compounds directly or indirectly to Yeader Creek:

| WASTEWATER PARAMETER | FREQUENCY | SAMPLE TYPE |
|---|---|---|
| $CBOD_5$ | 1/week | grab |
| Ethylene Glycol | 2/week | grab |
| Propylene Glycol | 2/week | grab |
| Dissolved Oxygen | 2/week | grab |
| TSS | 1/week | grab |
| pH | 1/week | grab |
| Flow | 2/week | instantaneous |

These parameters shall be measured immediately downstream of the culvert under Fleur Drive which lies at the head of Yeader Creek after the flows from both sides of the culvert have been thoroughly mixed but before flows from any additional culverts or other conveyances have entered the creek. The flow measurement shall include the flows from both sides of the culvert. Sampling for these parameters shall be conducted from October 1 to May 31, during any other month glycol-based anti-icing or deicing compounds are used at the Facility, and during any other month glycol or products of decomposition of glycol is discharged to surface waters. The analyses for ethylene and propylene glycols shall be conducted from the same sample. Flow measurements shall be conducted at the same time sampling for the other parameters is conducted.

Outfalls 002, 003 and all other known storm water discharges contaminated with glycol based deicing compounds:

| WASTEWATER PARAMETER | FREQUENCY | SAMPLE TYPE |
|---|---|---|
| $CBOD_5$ | 1/ 2 weeks | grab |
| Ethylene Glycol | 1/ 2 weeks | grab |
| Propylene Glycol | 1/ 2 weeks | grab |
| Dissolved Oxygen | 1/ 2 weeks | grab |
| TSS | 1/ 2 weeks | grab |
| pH | 1/ 2 weeks | grab |
| Flow | 1/ 2 weeks | instantaneous |

Flow shall be measured in the unnamed tributary to Frink Creek immediately upstream of the point where this tributary joins Frink Creek immediately east of the point at which Frink Creek flows under SW 42nd St.. The analyses for ethylene and propylene glycols shall be conducted from the same sample. The other parameters shall be measured, in the case of discharges to Frink Creek, at this same point. Flow measurements shall be conducted at the same time sampling for the other parameters is conducted.

Flow shall also be measured in the unnamed tributary to Middle Creek at the outlet of the storm water detention basin immediately north of Army Post Road and west of SW 28th Ct. The analyses for ethylene and propylene glycols shall be conducted from the same sample. The other parameters shall be measured, in the case of discharges indirectly to Middle Creek, at this same point. Flow measurements shall be conducted at the same time sampling for the other parameters is conducted.

In the case of other discharges contaminated with glycol based anti-icing or deicing compounds or with products of decomposition of glycol discovered during the term of this permit; the parameters in the above table, oil and grease, and BETX shall be measured at the point where the discharge leaves airport property or as close to this point as is practical and shall be measured 2/week. Flow need not be measured for these other discharges at this time. Sampling for these parameters shall be conducted from October 1 to May 31, during any other month glycol-based anti-icing or deicing compounds are used at the Facility, and during any other month glycol or products of decomposition of glycol is discharged to surface waters.

Whenever possible the grab samples should be taken when pollutant concentrations in the storm water/melt water discharges from deicing/anti-icing operations are expected to be at a maximum.

All samples required to be taken by this permit shall be observed for color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution. These observations shall be reported with the other sample results.

A sampling waiver may be granted by the Department if adverse weather conditions that prohibit the collection of samples create dangerous condition for personnel (such as high winds, blizzard conditions, etc.)

**B.** RECORDS CONTENTS

Records for analytical monitoring information shall include:

1. the date, exact place, and time of sampling or measurements;
2. the name(s) of the individual(s) who performed the sampling or measurements;
3. the date(s) analyses were performed;
4. the time(s) analyses were initiated;
5. the initials or name(s) of the individual(s) who performed the analyses;
6. references and written procedures, when available, for the analytical techniques or methods used; and
7. the results of such analyses, including copies of the original laboratory sheets and instrument readouts if available.

Records of analytical monitoring information shall be submitted to the Department within 15 days following the end of each calendar month in which they are due.

**C.** RETENTION OF RECORDS

The Facility shall retain records of all monitoring information, copies of all reports required by this permit, and records of all data used to complete the application for this permit for a period of at least 5 years from the date of sample, measurement, evaluation or inspection, report or application. This period may be extended by request of the Department at any time prior to the expiration of the retention period and shall be automatically extended during periods of enforcement action. The Facility must submit any such records to the Department upon request.

## PART VI. DEFINITIONS

1. Anti-icing means the process which prevents the accumulation of frost, snow, or ice.
2. Best Management Practices ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.
3. Bypass means the intentional diversion of waste streams from any portion of a treatment facility.
4. Co-permittees means tenants of the airport facility including airline companies, fixed base operators, military or other government establishments and other parties which have contracts with the airport authority to conduct business operations on airport property which result in storm water discharges associated with industrial activity as described in Part I of this permit.
5. CWA means Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972).
6. Deicing means the process to remove frost, snow, or ice.
7. Department means the Iowa Department of Natural Resources (IDNR) or an authorized representative.
8. Discharge means the release of water and any elements, compounds, and particles contained within or upon, from property owned or controlled by an individual, individuals, or entity and where the release originates on said property.

9. Dry weather discharges means those discharges generated by processes other than those included in the definition of storm water.

10. Facility means the Des Moines International Airport.

11. Hazardous condition includes, but is not limited to: releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (see 40 CFR 110.10 and CFR 117.21) or Section 102 of CERCLA (see 40 CFR 302.4).

12. Permittee means the Des Moines Airport Authority.

13. Point source means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

14. Separate storm sewer system means a conveyance or system of conveyances including storm sewers, roadways, roads with drainage systems, catch basins, curbs, gutters, ditches, constructed channels and storm drains.

15. Significant materials includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under Section 101(14) of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); any chemical the facility is required to report pursuant to Emergency Planning and Community Right-to-Know Act (EPCRA) Section 313; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

16. Storm water means storm water runoff, snow melt runoff, and surface runoff and drainage.

17. Storm water discharge associated with industrial activity means the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. The term does not include discharges from facilities or activities excluded from the NPDES program. For the categories of industries identified in paragraphs (i) through (x) of this definition, the term includes, but is not limited to, storm water discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters (as defined at 40 CFR Part 401); sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water. For the categories of industries identified in paragraph (xi) of this definition, the term includes only storm water discharges from all areas (except access roads and rail lines) listed in the previous sentence where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water. For the purposes of this paragraph, material handling activities include the storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, finished product, by-product or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with storm water drained from the above described areas. Industrial facilities (including industrial facilities that are Federally, State, or municipally owned or operated that meet the description of the facilities listed in paragraphs (i) to (xi) of this definition) include those facilities designated under 40 CFR 122.26(a)(1)(v). The following categories of facilities are considered to be engaging in "industrial activity" for purposes of this subsection.

(i) Facilities subject to storm water effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards under 40 CFR Subchapter N (except facilities with toxic pollutant effluent standards that are exempted under category (xi) of this definition);

(ii) Facilities classified as Standard Industrial Classifications 24 (except 2434), 26 (except 265 and 267), 28 (except 283 and 285), 29, 311, 32 (except 323), 33, 3441, 373;

(iii) Facilities classified as Standard Industrial Classifications 10 through 14 (mineral industry) including active or inactive mining operations (except for areas of coal mining operations no longer meeting the definition of a reclamation area under 40 CFR 434.11(l) because the performance bond issued to the facility by the appropriate SMCRA authority has been released, or except for areas of non-coal mining operations that have been released from applicable State or Federal reclamation requirements after December 17, 1990) and oil and gas exploration, production, processing, or treatment operations, or transmission facilities that discharge storm water contaminated by contact with or that has come into contact with, any overburden, raw material, intermediate products, finished products, byproducts or waste products located on the site of such operations; inactive mining operations are mining sites that are not being actively mined, but that have an identifiable owner/operator;

(iv) Hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under Subtitle C of RCRA;

(v) Landfills, land application sites, and open dumps that have received any industrial wastes (waste that is received from any of the facilities described under this subsection) including those that are subject to regulation under Subtitle D of RCRA;

(vi) Facilities involved in the recycling of materials, including metal scrap yards, battery reclaimers, salvage yards, and automobile junkyards, including but limited to those classified as Standard Industrial Classification 5015 and 5093;

(vii) Steam electric power generating facilities, including coal handling sites;

(viii) Transportation facilities classified as Standard Industrial Classifications 40, 41, 42 (except 4221-25), 43, 44, 45 and 5171 that have vehicle maintenance shops, equipment cleaning operations, or airport deicing operations. Only those portions of the facility that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, airport deicing operations, or that are otherwise identified under paragraphs (i) to (vii) or (ix) to (xi) of this subsection are associated with industrial activity;

(ix) Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that are located within the confines of the facility, with a design flow of 1.0 mgd or more, or required to have an approved pretreatment program under 40 CFR Part 403. Not included are farm lands, domestic gardens or lands used for sludge management where sludge is beneficially reused and that are not physically located in the confines of the facility, or areas that are in compliance with 40 CFR Part 503;

(x) Construction activity including clearing, grading and excavation activities except: operations that result in the disturbance of less than 5 acres of total land area that are not part of a larger common plan of development or sale;

(xi) Facilities under Standard Industrial Classifications 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 285, 30, 31 (except 311), 323, 34 (except 3441), 35, 36, 37 (except 373), 38, 39, 4221-25, (and that are not otherwise included within categories (i) to (x)).

18. Upset means an exceptional incident in which there is unintentional and temporary noncompliance with the numeric effluent limitations of this permit because of factors beyond the reasonable control of the permittees. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. Factors beyond the reasonable control of the co-permittees which may affect the compliance include: an exercise of individual pilot discretion for the purpose of protecting human health and safety, extreme weather conditions beyond the design storm, aircraft accidents resulting in severe property damage or power outage.

19. Waste pile means any noncontainerized accumulation of solid, non-flowing waste that is used for treatment or storage.

20. Water of the State means any stream, lake, pond, marsh, watercourse, waterway, well, spring, reservoir, aquifer, irrigation system, drainage system and any other body or accumulation of water, surface or underground, natural or artificial, public or private, which are contained within, flow through or border upon the state of Iowa or any portion thereof. Water contained within any structure specifically intended to detain storm water associated with industrial activity and the pollutants contained therein or piping intended to convey storm water associated with industrial activity and the pollutants contained therein that is required by this permit or required to meet the conditions contained in this permit is not considered to be a Water of the State for the purposes of this permit.

## PART VII. STANDARD CONDITIONS

### A. CO-PERMITTEE'S DUTY TO COMPLY

The co-permittees must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. Issuance of this permit does not relieve the co-permittees of the responsibility to comply with all local, state and federal laws, ordinances, regulations or other legal requirements applying to the operation of your facility.

### B. DUTY TO PROVIDE INFORMATION

The co-permittees shall furnish to the Department, within a time specified by the Department, any information that the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. You must also furnish to the Director, upon request, copies of any records required to be kept by this permit.

### C. TRANSFER OF TITLE

If title to the facility or part thereof for which a permit has been issued under these rules is transferred, the new owners shall be subject to all terms and conditions of the permit. Whenever title to a disposal system or part thereof is changed, the department shall be notified in writing of such change within 30 days of the occurrence. No transfer of the authorization to discharge from the facility represented by the permit shall take place prior to notification of the department of the transfer of title. Whenever the address of the owner is changed, the department shall be notified in writing within 30 days of the address change. Electronic notification is not sufficient; all title transfers and address changes must be reported to the department by mail.

### D. NEED TO HALT OR REDUCE ACTIVITY NOT A DEFENSE

It shall not be a defense for a co-permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

### E. SIGNATORY REQUIREMENTS

Storm Water Pollution Prevention Plans, reports, certifications or information either submitted to the Department (and/or the operator of a large or medium municipal separate storm sewer system), or that this permit requires be maintained by the co-permittees, shall be signed as follows:

1. For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: 1) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or 2) the manager of one or more manufacturing, production or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25,000,000 (in second-quarter 1980 dollars) if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

2. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or for a municipality, State, Federal, or other public facility: by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes 1) the chief executive officer of the agency, or 2) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

3. Certification.. Any person signing documents shall make the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

**F.** DUTY TO MITIGATE

The co-permittees shall take all reasonable steps to minimize or prevent any discharge in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

**G.** PROPERTY RIGHTS

The issuance of this permit does not convey any property rights of any sort nor any exclusive privileges.

**H.** SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

**I.** STATE/ENVIRONMENTAL LAWS

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the co-permittees from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act. No condition of this permit shall release the co-permittees from any responsibility or requirements under other environmental statutes or regulations.

**J.** PROPER OPERATION AND MAINTENANCE

All facilities and control systems shall be operated as efficiently as possible and maintained in good working order. A sufficient number of staff, adequately trained and knowledgeable in the operation of your facility shall be retained at all times and adequate laboratory controls and appropriate quality assurance procedures shall be provided to maintain compliance with the conditions of this permit.

**K.** INSPECTION AND ENTRY

The co-permittees shall allow the Department, an authorized representative or an authorized representative of the municipal operator of the separate storm sewer receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to: enter upon the co-permittee's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit; have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; inspect at reasonable times any facilities or equipment (including monitoring and control equipment); and to sample any discharge of pollutants.

**L.** PERMIT MODIFICATION, SUSPENSION OR REVOCATION

(a) This permit may be modified, suspended, or revoked and reissued for cause including but not limited to those specified in 567 IAC 64.3(11).

(b) This permit may be modified due to conditions or information on which this permit is based, including any new standard the department may adopt that would change the required effluent limits.

(c) If a toxic pollutant is present in the discharge of this facility and more stringent standards for toxic pollutants are established under Section 307(a) of the Clean Water Act, this permit will be modified in accordance with the new standards.

The filing of a request for a permit modification, revocation or suspension, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

**M.** BYPASSES

1. Anticipated Bypass of Treatment Facility - If a co-permittee knows in advance of the need for a bypass, notice be submitted, if possible, at least 10 days before the date of the bypass; including an evaluation of the anticipated quality and effect of the bypass.

2. Unanticipated Bypass of Treatment Facility - A co-permittee shall submit notice of an unanticipated bypass. Any information regarding the unanticipated bypass shall be provided orally as soon as possible but not later than 12 hours from the time the co-permittee became aware of the circumstances. A written submission shall also be provided within 5 days of the time the co-permittee became aware of the circumstances. The written submission shall contain a description of the bypass and its cause; the period of the bypass; including exact dates and times, and if the bypass has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass.

3. Prohibition of Bypass

a. Bypass is prohibited and the Department may take enforcement action against a co-permittee for a bypass unless:

(1) the bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(2) there were no feasible alternatives to the bypass, such as the use of auxiliary facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if the co-permittees should, in the exercise of reasonable engineering judgment, have installed adequate backup equipment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance; and

(3) the co-permittees submitted notices of the bypass as required in 567 IAC 63.6.

b. The Department may approve an anticipated bypass after considering its adverse effects, if the Department determines that it will meet the three conditions listed in 567 IAC 63.6.

4. Upset Conditions

a. Affirmative Defense - An upset constitutes an affirmative defense to an action brought for noncompliance with technology-based numeric effluent limitations of this permit if the requirements below are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

b. Required Defense - A co-permittee(s) who wishes to establish the affirmative defense of an upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence, that:

(1) An upset occurred and that the co-permittee can identify the specific cause(s) of the upset:

(2) The permitted facility was at the time being properly operated; and

(3) The co-permittee provided oral notice of the upset to the Department within 24 hours from the time the co-permittee became aware of the circumstances. A written submission shall also be provided within 5 days of the time the co-permittee became aware of the circumstances. The written submission shall contain a description of the upset and its cause; the period of the upset; including exact dates and times, and if the upset has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the upset.

c. Burden of Proof - In any enforcement proceeding the co-permittee seeking to establish the occurrence of an upset has the burden of proof.

**N.** FAILURE TO SUBMIT FEES

This permit may be revoked, in whole or in part, if the appropriate permit fees are not submitted within 30 days of the date of notification that such fees are due.

**O.** PENALTIES FOR VIOLATIONS OF PERMIT CONDITIONS

Section 309 of the CWA provides significant penalties for a person(s) who violates a permit condition implementing Section 301, 302, 306, 307, 318, or 405 of the CWA, or any permit condition or limitation implementing any such sections in a permit issued under Section 402. Any person(s) who violates any condition of this permit is subject to a civil penalty not to exceed $25,000 per day of such violation, as well as any other appropriate sanction provided by Section 309 of the CWA.

**P.** DUTY TO REAPPLY AND PERMIT CONTINUATION

To discharge after the expiration date of this permit, a complete application for reissuance must be filed at least 180 days prior to the expiration date of this permit. If a timely and sufficient application is submitted, this permit will remain in effect until the Department makes a final determination on the permit application.

**Q.** TWENTY FOUR HOUR REPORTING

Any noncompliance that may endanger human health or the environment, including, but not limited to, violations of maximum daily limits for any toxic pollutant (listed as toxic under 307(a)(1) of the Clean Water Act) or hazardous substance (as designated in 40 CFR Part 116 pursuant to 311 of the Clean Water Act) shall be reported to the Department. Information shall be provided orally within 24 hours from the time the co-permittees become aware of the circumstances. A written submission that includes a description of noncompliance and its cause; the period of noncompliance including exact dates and times, whether the noncompliance has been corrected or the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent a reoccurrence of the noncompliance must be provided within 5 days of the occurrence.

**R.** OTHER NONCOMPLIANCE

All instances of noncompliance not reported under Condition Q. at the time monitoring reports are submitted shall be reported to the Department. Advance notice shall be made to the appropriate regional field office of the Department of any planned activity which may result in noncompliance with permit requirements.

**S.** PLANNED CHANGES

The co-permittees shall give notice to the appropriate regional field office of the Department 30 days prior to any planned physical alterations or additions to the permitted facility. Notice is required only when:

(a) Notice has not been given to any other section of the Department. (Note: Facility expansions, production increases, or process modifications which may result in new or increased discharges of pollutants must be reported to the Director in advance. If such discharges will exceed effluent limitations, your report must include an application for a new permit. If any modification of, addition to, or construction of a disposal system is to be made, you must first obtain a written permit from this Department. In addition, no construction activity that will result in disturbance of one acre or more shall be initiated without first obtaining coverage under NPDES General Permit No. 2 for "Storm water discharge associated with construction activity.")

(b) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source as defined in 567 IAC 60.2;

(c) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices; or

(d) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in the permit.

## T. USE OF CERTIFIED LABORATORIES

Analyses of water that are required to be submitted to the department as a result of this permit must be performed by a laboratory certified by the State of Iowa. Routine, on-site monitoring for pH, temperature, dissolved oxygen, total residual chlorine and other pollutants that must be analyzed immediately upon sample collection, settleable solids, physical measurements, and operational monitoring tests specified in 567 IAC 63.3(4) are excluded from this requirement.

**STATE OF IOWA**
**DEPARTMENT OF NATURAL RESOURCES**
**ENVIRONMENTAL PROGRAM**
**AMENDMENT TO NPDES PERMIT**

Iowa NPDES Permit # 77-27-0-08
Date of Issuance: May 1, 2017
Date of Expiration: April 30, 2022
Date of this Amendment: **August 1, 2018**
EPA NUMBER: IA0075931

**Name and Mailing Address of Applicant:**

Des Moines International Airport
5800 Fleur Dr.
Des Moines, IA 50321-2854

**Identity and Location of Facility:**

Des Moines International Airport
5800 Fleur Dr.
Des Moines, IA 50321-2854

Pursuant to the authority Iowa Code Section 455B.174, and of Rule 567--64.3, Iowa Administrative Code, the Director of the Iowa Department of Natural Resources has issued the above referenced permit. Pursuant to the same authority the Department hereby amends said permit as set forth below:

The permit is amended to add $CBOD_5$ limits at outfall 001 for the months of June, July, August and September in Part IV as follows:

Limits for $CBOD_5$:

| MONTH | AMOUNT PER DAY | | CONCENTRATION | |
|---|---|---|---|---|
| | Average | Maximum | Average | Maximum |
| January | ----- | ----- | 100.0 mg/l | 150.0 mg/l |
| February | ----- | ----- | 100.0 mg/l | 150.0 mg/l |
| March | ----- | ----- | 100.0 mg/l | 150.0 mg/l |
| April | ----- | ----- | 100.0 mg/l | 150.0 mg/l |
| May | ----- | ----- | 100.0 mg/l | 140.0 mg/l |
| June | ----- | ----- | 95.0 mg/l | 95.0 mg/l |
| July | ----- | ----- | 72.0 mg/l | 72.0 mg/l |
| August | ----- | ----- | 95.0 mg/l | 95.0 mg/l |
| September | ----- | ----- | 80.0 mg/l | 80.0 mg/l |
| October | ----- | ----- | 100.0 mg/l | 150.0 mg/l |
| November | ----- | ----- | 100.0 mg/l | 150.0 mg/l |
| December | ----- | ----- | 100.0 mg/l | 150.0 mg/l |

The permit is amended to change the requirement to maintain a minimum dissolved oxygen concentration at outfall 001 of 5.0 mg/l In Part IV from this time period:

"from October 1 to May 31, during any other month glycol-based anti-icing or deicing compounds are used at the Facility, and during any other month glycol contaminated storm water is discharged to surface waters."

to this time period:

"from January 1 to December 31."

The permit is amended to change the requirement to maintain a minimum dissolved oxygen concentration at outfall 002 of 5.0 mg/l In Part IV from this time period:

"from October 1 to May 31, during any other month glycol-based anti-icing or deicing compounds are used at the Facility, and during any other month glycol contaminated storm water is discharged to surface waters."

to this time period:

"from January 1 to December 31."

The permit is amended to change the requirement to maintain a minimum dissolved oxygen concentration at outfall 003 of 5.0 mg/l In Part IV from this time period:

"from October 1 to May 31, during any other month glycol-based anti-icing or deicing compounds are used at the Facility, and during any other month glycol contaminated storm water is discharged to surface waters."

to this time period:

"from January 1 to December 31."

The permit is amended to change the time period for which monitoring is required at outfall 001 in Part V from this time period:

"from October 1 to May 31, during any other month glycol-based anti-icing or deicing compounds are used at the Facility, and during any other month glycol or products of decomposition of glycol is discharged to surface waters."

to this time period:

"from January 1 to December 31."

The permit is amended to change the time period for which monitoring is required at outfalls 002, 003 and for any other discharges contaminated with glycol based anti-icing or deicing compounds or with the products of decomposition of glycol discovered during the term of the permit in Part V from this time period:

"from October 1 to May 31, during any other month glycol-based anti-icing or deicing compounds are used at the Facility, and during any other month glycol or products of decomposition of glycol is discharged to surface waters."

to this time period:

"from January 1 to December 31."

For the Department of Natural Resources:

By_____

Joe Griffin
NPDES Section
Environmental Protection Division

*DES MOINES METROPOLITAN*
*WASTEWATER RECLAMATION AUTHORITY*
CITY OF DES MOINES, OPERATING CONTRACTOR

July 29, 2019

Bryan Belt
Des Moines International Airport
5800 Fleur Ave., Rm. 201
Des Moines, IA 50321-2854

RE: Annual Inspection on July 15, 2019
Permit No. A10016, Customer No. 10240

Dear Mr. Belt,

Thank you for cooperating with the past inspection of your facility. Comments and requirements may be found on the last page of the Inspection Report. Please keep us informed of any changes and developments that may affect your facility's discharge to the Wastewater Reclamation Facility.

City Ordinance 118-352 requires us to collect a $100.00 fee for inspections of Class A permit holders. An invoice is enclosed. Questions should be directed to Paul Ebert, in Industrial Pretreatment, at 515/323-8133.

Sincerely,

Larry Hare
WRF Treatment Manager
WRA Wastewater Reclamation Facility

LH/ajf

Enc: Inspection Report
Invoice

CC: file



Phone 515/323-8000 • Fax 515/323-8050 • www.dmmwra.org
3000 Vandalia Road • Des Moines, IA 50317-1346

DES MOINES
Department of Public Works

# Des Moines Metropolitan Wastewater Reclamation Authority

WRA

## INDUSTRIAL INSPECTION

INDUSTRY NAME: Des Moines International Airport

ADDRESS: 5800 Fleur Drive, Des Moines, IA 50321-2854

MAILING ADDRESS: 5800 Fleur Ave., Rm. 201, Des Moines, IA 50321-2854

PHONE: (515) 256-5160 FAX: (515) 256-5048

CONTACT PERSON: Bryan Belt TITLE: Airport Engineer

PERSONNEL PRESENT: Damon Quick, Cole Steffes, Jeff Mease

INSPECTED BY: Andrew Finke

DATE / TIME: 7/15/2019, 2:00PM

TYPE OF INSPECTION:
- ☒ ANNUAL
- ☐ FOLLOW-UP / NON-COMPLIANCE
- ☐ COMPLAINCE
- ☐ SURVEY
- ☐ INITIAL APPLICATION

CATEGORY:
- ☒ SIGNIFICANT, NONCATEGORICAL
- ☐ CATEGORICAL
- ☐ NONSIGNIFICANT, NONCATEGORICAL
- ☒ EXISTING BUSINESS
- ☐ NEW BUSINESS
- ☒ LOCAL LIMITS
- ☐ CONVENTIONAL LIMITS
- ☐ METALS LIMITS
- ☒ SOLVENTS LIMITS

### GENERAL INFORMATION

YEARS AT THIS LOCATION: Since 1999 (North Det. Tank), Since 2002 (South Cargo Tanks)

OTHER LOCATIONS: 2x 5,000-gallon underground storage tanks at East Cargo

NO. OF SHIFTS: 3 (Engineer staff) NO. OF EMPLOYEES: 7 WORKDAYS: 7 days

DESCRIBE ANY SEASONAL OR SHIFT VARIATION (PEAK OPERATIONS AND PRODUCTS):
Deicing begins late-September and ends mid-May, depending on weather conditions

LATEST PERMIT APPLICATION UPDATE: 2/18/2019

### PRODUCT OR SERVICE INFORMATION

DESCRIPTION OF PRIMARY MANUFACTURING OR SERVICE ACTIVITY: Airplane deicing and runway snow/ice melting.

LIST SPECIFIC PROCESSES OCCURRING AT FACILITY: Storage, mixing, and application of airplane deicer chemicals, airplane refueling, runway plowing and deicing.

RECENT PROCESS OR COMPANY CHANGES: Remove sample sump from North Det. tank and replace with level sensor. Alan Whittlatch retired!

PROCESS OR COMPANY CHANGES ANTICIPATED IN THE COMING YEAR: Replace sensors and routine maintenance. Relocating "Signature Flight" to new building near UPS.

(Very long term: build new terminal, then replace existing terminal with new building)

## ENVIRONMENTAL PERMITS

PERMITS HELD:

- ☒ WASTEWATER — ☒ CONNECTED TO WRA POTW, PERMIT EXPIRES: 6/1/2023
- ☐ AIR — ☐ WASTEWATER GENERATED? VOLUME:
- ☐ HAZARDOUS WASTE — ☐ VERY SMALL ☐ SMALL ☐ MEDIUM ☐ LARGE
  - ☐ HAZARDOUS WASTE STORAGE (30, 60, 90, 180, 270 DAYS)
  - DESCRIBE:
  - WASTEHAULER:
- ☒ OTHER — SPECIFY: NPDES permit – Storm water to Frink, Middle, Yeader Creeks

## WATER USE

| | | AVERAGE DAILY USE | METERED? |
|---|---|---|---|
| RAW WATER SOURCE: | ☒ CITY | 24,000 gallons | ☒ |
| | ☐ PRIVATE WELLS | | ☐ |
| | ☐ SURFACE WATER | | ☐ |

ANY TREATMENT OR CONDITIONING OF WATER: ☐ YES ☒ NO

DESCRIBE: N/A

HAS COMPANY PROVIDED:

- WATER FLOW SCHEMATIC ☒
- SEWER LAYOUT ☒
- PROCESS DIAGRAM ☐

## MATERIALS USED

- SOLVENTS: Ethylene glycol, propylene glycol
- PAINTS: Maintenance
- OILS:
- ACIDS:
- BASES:
- OTHER: Potassium acetate, sodium acetate (runway deicers)
- MOLYBDENUM: ☐ YES ☒ NO DESCRIBE:
- TTOs: None

## WASTE GENERATION

WASTE PROCESS MATERIAL GENERATED (such as spent solvent, paint, acid, oil, sludge, etc.)

| SOURCE | DISPOSAL METHOD |
|---|---|
| Glycol contaminated storm water (high conc.) | Sanitary sewer |
| Glycol contaminated storm water (low conc.) | Discharged to Frink and Yeader Creeks |
| Grit and sludge (tank cleaning) | Hauled or pumped to WRF (1x / year) |
| Maintenance oil/water separators | WCEC (as needed) |

## WASTEWATER AND PRETREATMENT SYSTEM

DESCRIBE PREATREATMENT SYSTEM:

North Detention Tank: Glycol contaminated storm water in terminal area drain into North Diversion structure, then (based on concentration level) flows to Yeader Creek unrestricted or to detention tank and then to sanitary sewer at a rate limited by flow and COD loading.

South Cargo Tanks: Glycol contaminated storm water in cargo area drains to South Cargo Diversion, then (based on concentration level) to Frink Creek unrestricted or to south cargo tanks and then to sanitary sewer at a rate limited by flow and COD loading.

East Cargo Tanks: Glycol storage containment area storm water flows to 2x5,000-gallon tanks then discharged to sanitary sewer when levels reach ~4,000 gallons.

UPS Diversion: UPS glycol contaminated storm water flows to UPS Diversion, then to Frink Creek or North Detention Tank.

Fed-Ex Diversion: Fed-Ex glycol contaminated storm water flows to Fed-Ex Diversion, then to Frink Creek or South Cargo Tanks.

IS DISCHARGE: ☐ CONTINUOUS ☒ INTERMITTENT ☐ BATCH ☐ ZERO

BATCHES/DAY/WEEK/MONTH/YEAR: N/A

SOURCE AND CONTENTS OF WASTEWATER: Storm water mixed with ethylene and propylene glycol (airplane deicer), acetate (runway deicer), fuel and oil from aircraft.

DOES SLUDGE RESULT? ☒ YES ☐ NO (grit/sand)

HOW IS THE SLUDGE REMOVED? Vactor truck or diaphragm pump

WHAT IS THE ULTIMATE DESTINATION OF THE SLUDGE? WRF

HOW IS FLOW MEASURED? Magnetic flow meters

WASTEWATER FLOW: N. Det. Tank ~145,000 gpd; S. Cargo ~73,000 gpd Jan-June 2019

IS A FLOW METER MAINTENANCE AND CALIBRATION RECORD MAINTAINED? ☒ YES ☐ N/A

DATE OF LAST CALIBRATION OR MAINTENANCE PERMFORMED: 5/24/2018 (every 3-years)

MONTHLY FLOW REPORTS MAINTAINED ON-SITE 3-YEARS? ☒ YES ☐ NO

IS THE COMBINED WASTESTREAM FORMULA USED? ☐ YES ☒ NO

IF YES, INDICATE METHOD: N/A

IS RECYCLING OF WATER OR WASTEWATER PRACTICED? ☐ YES ☒ NO

IF YES: N/A

LAUNDRY: ☐ IN ☐ OUT ☒ N/A COMPANY: N/A

## SAMPLING

SAMPLING POINT: North Detention Tank – from Diversion Structure;
South Cargo – manhole SE of east tank; East Cargo – cut out in manhole on south tank

SAMPLER LOCATION: North Detention Tank – sample pump in Detention Control building;
South Cargo – grab sample

DILUTION OF THE REGULATED WASTE STREAM? ☐ YES ☒ NO

IS THE INDUSTRY SAMPLED BY THE WWTP? ☒ YES ☐ NO

SCHEDULE:

| Frequency | Test |
|---|---|
| 1x / week | COD (when discharging to WRF) |
| 1x / annual | pH, TPH, O&G |

DOES THE INDUSTRY DO SELF-MONITORING? ☐ YES ☒ NO

DESCRIBE: N/A

## SPILL CONTROL

IS A SPILL CONTROL PLAN REQUIRED BY WRA? ☐ YES ☒ NO

DOES COMPANY HAVE A SPILL CONTROL PLAN? ☒ YES ☐ NO

IS SCP TRAINING DONE ON A REGULAR BASIS? ☒ YES ☐ NO

DESCRIBE TRAINING: New employee and annual refresher (see SCP/SWPP)

SPILL CONTROL EQUIPMENT: See SCP/SWPP

CONTAINMENT: Double walled glycol tanks, diversion and detention tanks

ARE DRAINS LOCATED NEAR STORAGE AREA OR PROCESS: ☒ YES ☐ NO

DESCRIBE LOCATION, DESTINATION, AND CONTAINMENT OF DRAINS: Terminal under drains go to main detention tank. South cargo under drains go to south cargo tanks or Frink Creek.

## SPILL RISK CATEGORIES

### High

- ☐ Stores, uses, or generates potentially harmful levels of toxic or hazardous materials
- ☐ Stores, uses, or generates quantities of pollutants which are known to impact the POTW
- ☐ No pretreatment prior to discharge
- ☐ History of slugs or spills
- ☐ Poor housekeeping
- ☐ No spill control plan

### Medium

- ☒ Stores, uses, or generates somewhat less than potentially harmful levels of toxic or hazardous materials
- ☒ Discharges or has the potential to discharge quantities of pollutants which may impact the POTW
- ☒ Pretreatment / flow and loading management prior to discharge
- ☒ Some direct connections to POTW
- ☐ No written spill control plan

### Low

- ☐ Stores, uses, or batch discharges none or significantly less than potentially harmful levels of toxic or hazardous materials
- ☐ No process discharge
- ☐ No discernible path to the sewer
- ☒ Written spill control plan approved by city

## SAFETY EQUIPMENT

- ☐ HARD HAT
- ☒ STEEL TOES
- ☒ SAFETY GLASSES
- ☐ HEARING PROTECTION
- ☒ OTHER: Special entry access

## COMMENTS

-Thank you for the refresher walk-through of the sampling areas.

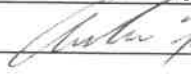
-Please remove old 2nd sample spigot at North Detention Tank to reduce sampling confusion.

-Please contact the WRA Pretreatment Office if there are any significant changes planned that will impact your wastewater discharge.

DATE: July 29, 2019

NAME: Andrew Finke

TITLE: Pretreatment Industrial Inspector

SIGNATURE: 

*DES MOINES METROPOLITAN*
*WASTEWATER RECLAMATION AUTHORITY*

CITY OF DES MOINES, OPERATING CONTRACTOR

May 28, 2019

Byran Belt
Des Moines International Airport
5800 Fleur Drive, Room 201
Des Moines, IA 50321-2854

RE: Wastewater Discharge Permit No. A10016
CERTIFIED MAIL

Dear Mr. Belt:

Enclosed is your Wastewater Discharge Permit for the Des Moines International Airport on Fleur Drive in Des Moines. This permit is effective until June 1, 2023; however, an annual permit fee will be due. Please keep us informed of any changes that may affect your facility's discharge to the sanitary sewer system.

Questions should be directed to Paul Ebert, in Industrial Pretreatment, at 515/323-8133.

Sincerely,

Larry Hare
WRF Treatment Manager
WRA Wastewater Reclamation Facility

LH/ajf

Enc: Wastewater Discharge Permit

CC: File

*DES MOINES METROPOLITAN*
*WASTEWATER RECLAMATION AUTHORITY*

CITY OF DES MOINES, OPERATING CONTRACTOR

DES MOINES METROPOLITAN WASTEWATER RECLAMATION FACILITY
WASTEWATER DISCHARGE PERMIT
PERMIT NO. A10016

In accordance with the provisions of the Municipal Code of Des Moines, Chapter 118, Article III, known as the Industrial Waste Ordinance,

Des Moines International Airport
5800 Fleur Drive
Des Moines, IA 50321-2854

is hereby authorized to discharge industrial wastewater from the above identified facility through the outfalls identified herein into the sewers of the Des Moines Metropolitan Wastewater Reclamation Authority in accordance with the conditions set forth in this permit. Compliance with this permit does not relieve the permittee of its obligations to comply with all applicable pretreatment regulations, standards, requirements, or laws that are or may become effective during the term of this permit.

Noncompliance with any term or condition of this permit shall constitute a violation of the City of Des Moines Industrial Waste Ordinance.

EFFECTIVE DATE: June 1, 2019

EXPIRATION DATE: June 1, 2023 TIME: Midnight

RENEWAL DATE: March 1, 2023

The permittee must file an application for permit renewal 90 days prior to the expiration date.

Scott Hutchens, P.E., WRA Director
City of Des Moines
WRA Wastewater Reclamation Facility

AMENDED: April 22, 2019

PART 1 - EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Daily Effluent Limitations

1. Main Detention Tank

| Pollutant | Sample Method(1) | Daily Maximum(2) | Monthly Average(3) | Units | EPA/ Local |
|---|---|---|---|---|---|
| Flow | | 0.720 | | MGD | L |
| Oil & Grease (T) | G | 400 | | mg/L | L |
| pH Range | G | 5.0 to 12.0 | | S.U. | L |
| COD | G | 15,000 (4) | | Lbs/Day | L |
| VPH (5) | G | 10.0 | | mg/L | L |

T = Total, C = Composite sample, G = Grab sample, E = EPA limits, L = Local limits

(1) Sampling location shall be from the bottom center of the tank and any other point downstream prior to dilution with other sanitary sewer flows. A sampling pump shall be maintained and pump the wastewater to the monitoring building above Diversion #1.

(2) Daily Maximum - The maximum allowable discharge of pollutant during a 24-hour day. Where daily maximum limitations are expressed in units of mass, the daily discharge is the total mass discharged during a 24-hour period. Where daily maximum limitations are expressed in terms of a concentration, the daily discharge is the maximum allowable concentration of a pollutant determined from the analysis of any grab or composite sample.

(3) Monthly average concentration shall mean the sum of all daily measurements divided by the number of analyses during the month.

(4) COD Maximum - The mass of COD discharged per day shall be calculated by adding the mass discharged from the Main Detention Tank and the mass discharged from the South Cargo Tanks. The combined mass the airport facility is allowed to discharge to the WRF is 15,000 pounds per day.

(5) Volatile Petroleum Hydrocarbons (VPH) shall be analyzed per Iowa OA-1 methodology.

2. South Cargo Detention Tanks

| Pollutant | Sample Method(1) | Daily Maximum(2) | Monthly Average(3) | Units | EPA/ Local |
|---|---|---|---|---|---|
| Flow | | 0.432 | | MGD | L |
| Oil & Grease (T) | G | 400 | | mg/L | L |
| pH Range | G | 5.0 to 12.0 | | S.U. | L |
| COD | G | 15,000 (4) | | Lbs/Day | L |
| VPH (5) | G | 10.0 | | mg/L | L |

T = Total, C = Composite sample, G = Grab sample, E = EPA limits, L = Local limits

(1) Sampling location shall be downstream from the flow monitoring manhole and any point downstream prior to dilution with other sanitary sewer flows. If a permanent sampling pump is not installed and approved by the WRF, a downstream manhole must have a paved access and be clear of obstructions, including snow.

(2) Daily Maximum - The maximum allowable discharge of pollutant during a 24-hour day. Where daily maximum limitations are expressed in units of mass, the daily discharge is the total mass discharged during a 24-hour period. Where daily maximum limitations are expressed in terms of a concentration, the daily discharge is the maximum allowable concentration of a pollutant determined from the analysis of any grab or composite sample.

(3) Monthly average concentration shall mean the sum of all daily measurements divided by the number of analyses during the month.

(4) COD Maximum - The mass of COD discharged per day shall be calculated by adding the mass discharged from the Main Detention Tank and the mass discharged from the South Cargo Tanks. The combined mass the airport facility is allowed to discharge to the WRF is 15,000 pounds per day.

(5) Volatile Petroleum Hydrocarbons (VPH) shall be analyzed per Iowa OA-1 methodology.

B. Slug Discharge Concentrations

The following pollutant concentrations shall be slug loads:

| Parameter | Concentration |
|---|---|
| pH | less than 4.0 or greater than 13.0 |
| Flow, COD | 2x Daily Maximum Limits |
| All other pollutants | 5x Daily Maximum Limits |

C. Monitoring Requirements

| Pollutant | Units | Type | Minimum Frequency | Performed By |
|---|---|---|---|---|
| Flow | gal/day or cu ft/day and gal/min | Meter | Continuous | IU |

D. Discharge of Prohibited Substances and Pollutants Not Listed Above

The permittee shall not discharge prohibited substances, listed in Chapter 118- 342 into the sewer. The permittee shall not discharge wastewater containing pollutants not listed above, in excess of limits listed in Chapter 118-343.

E. The permittee is authorized to discharge ethylene and propylene glycol and acetate solutions provided the COD limit listed in Part 1.A is not exceeded.

F. This permit is intended to authorize and control the discharge of airport de-icing fluids from the glycol detention/equalization tanks and any other approved point sources containing de-icing fluids. Other wastewater flows from the Des Moines International Airport are regulated under Chapter 118, Article III.

PART 2 - REPORTING REQUIREMENTS

A. Monthly Flow Reports

The Industrial User (IU) shall submit monthly flow reports indicating the daily flow of process wastewater discharged to the Des Moines Metropolitan Wastewater Reclamation Facility (WRF) and whether the flow is measured in cubic feet or gallons. The report shall be post-marked or faxed not later than the 3rd business day following the end of the reporting period.

B. Monitoring Reports

1. Semi-Annual Reports

The WRF shall prepare a semi-annual report indicating the nature and concentration of pollutants in the effluent which are being monitored as described above. The report periods are as follows:

| Semi-Annual | Periods Covered |
|---|---|
| 1st Half | January – June |
| 2nd Half | July - December |

Semi-Annual Report Format

(a) Identifying information.
(b) Flow measurement.
(c) Measurement of pollutants.
(d) Certification and signature by permittee.
(e) Compliance schedule (as required).
(f) Additional Monitoring (as required).

2. Reports - Additional Monitoring

The IU shall also report all analyses performed on the discharge in the reporting period and shall calculate the daily pounds of COD discharged. Where sampling and analysis is performed by the WRF, no report other than a monthly flow report is required. The original report and supporting documentation shall be kept on file at the place of business for a minimum of three (3) years.

If the IU monitors any pollutant more frequently than required by this permit, using test procedures prescribed in 40 CFR Part 136, the results of such monitoring shall be submitted to the WRF. Such monitoring results shall be summarized and reported once per month. The reports are due on the 15th day following each calendar month.

C. Daily Reports: Initial Flow Notification and Major Flow Adjustments

The permittee shall notify the WRF by telephone at 515/323-8000 or 8133 or by email (pcebert@dmgov.org) when a discharge begins from any tank and any major increase in flow rate or mass of COD being discharged. The notification shall contain the discharge site, date, time, and flow rate. Additional information such as tank levels should be included when appropriate.

D. Accidental Discharge Report

The IU shall notify the WRF immediately of all discharges that could cause problems to the WRF, including any slug loadings, as outlined in Chapter 118-349. Formal written notification discussing circumstances and remedies shall be submitted to the WRF within five (5) days of the occurrence. The following procedures shall be followed:

1. Accidental discharges that contain pollutants that exceed the permitted limit by 5x or that exceed a designated slug discharge concentration shall be reported immediately.

2. Accidental discharges that may cause permanent damage to the collection or treatment system shall be reported immediately. These discharges include, but are not limited to, pollutants that may cause a fire or explosion hazard in the collection system, pH of less than 4.0 or greater than 13.0 for longer than ten (10) minutes, any pollutant in a concentration that would increase the atmosphere in the collection system above the LC50 for human exposure, and any pollutant that may increase the concentration in the influent to the WRF enough to decrease treatment efficiency.

3. The IU shall notify the WRF immediately by telephone at 515/323-8000 or 8133. The notification shall include the name of the person making the call, telephone number where said person can be reached, location of discharge, date and time thereof, type of waste, including concentration and volume, and corrective action taken.

   The party making the call shall be available by phone for a minimum of fifteen (15) minutes after the notification is made. This is so that a member of the WRF may contact the industry representative for more information, if necessary.

4. Within five (5) days following an accidental discharge, the IU shall submit to the WRF a detailed written report. The report shall specify:

   (a) Description and cause of the upset, slug or accidental discharge, the cause thereof, and the impact on the permittee's compliance status. The description should also include location of discharge, type, concentration and volume of waste.

   (b) Duration of noncompliance, including exact dates and times of noncompliance, and if the noncompliance continues, the time by which compliance is reasonably expected to occur.

   (c) All steps taken or to be taken to reduce, eliminate and prevent recurrence of such a slug discharge, accidental discharge, or other condition of noncompliance.

E. Spill Containment Plan (SCP)

The IU shall develop spill prevention plan, when required to do so by the WRF, by submitting the priority pollutant compounds, oxygen demanding pollutants, and pH of compounds used; the method of disposal used instead of dumping, such as reclamation, contract hauling, or incineration; procedures for assuring that priority pollutants do not routinely spill or leak into the sewer system; and procedures for notifying the WRF of slug discharges. The IU shall maintain, update, and implement its accidental spill prevention plan to eliminate or minimize the accidental or slug discharge of pollutants into the sewer system, which could have effect on the WRF's treatment plant, sludge, receiving stream or cause the WRF to violate its NPDES permit. An updated copy of the spill prevention plan shall be provided to the WRF. Any spill prevention structures required by the WRF shall be installed at the sole expense of the IU.

F. Anticipated Noncompliance

The permittee shall give advance notice to the WRF of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

G. Signatory Requirements

All applications and reports submitted to the WRF must contain the following certification statement and be signed as required in Section (1) below:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

1. All applications and reports shall be signed by an authorized representative of the IU as defined below:

   Authorized Representative means:
   (a) An executive officer of a corporation.
   (b) A general partner of a partnership.
   (c) The proprietor of a proprietorship.
   (d) The conservator, trustee, attorney in fact, receiver or other person or agent authorized in law and in fact to act on behalf of Users which are not corporations, partnerships, or proprietorships or on behalf of other entities which must legally act through an agent.
   (e) Any other authorized representative of (a), (b), (c), or (d) above if the authorization specifies either an individual or a position having responsibility for the overall operation of the facility from which the discharge originates, such as the position of plant manager or a position of equivalent responsibility, or having overall responsibility for environmental matters for the company and the written authorization is submitted to the WRA Director.
   (f) Any other person authorized by law to act on behalf of any entity.

2. If an authorization under paragraph (d) of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, or overall responsibility for the environmental matters for the company, a new authorization satisfying the requirements of paragraph (d) of this section must be submitted to the WRF prior to or together with any reports to be signed by an authorized representative.

H. Wastewater Reclamation Facility Address and Phone Number

All reports, applications and correspondence shall be submitted to the following address:

Des Moines Metropolitan Wastewater Reclamation Facility
Attention: Pretreatment Coordinator
3000 Vandalia Road
Des Moines, IA 50317

Telephone notification shall be to WRF - 515/323-8000 or 8133.

PART 3 - USER FEES AND CHARGES

A. Sewer Service Charges & Fees

Sewer service charges and fees shall be as provided for in Chapter 118 of the Municipal Code. All charges and fees shall be payable within 30 days of the date invoiced. Groundwater and surface water run-off discharged to the sanitary sewer are subject to sewer flow charges as allowed by City Ordinance.

B. Surcharges

Users contributing wastewater with pollutants in excess of domestic concentrations shall be assessed a surcharge which shall be in addition to the rates and charges ordinarily billed.

| Pollutant | Domestic Concentration |
|---|---|
| Biochemical Oxygen Demand (BOD) | 200 mg/L |
| Total Suspended Solids (TSS) | 250 mg/L |
| Total Kjeldahl Nitrogen (TKN) | 30 mg/L |
| Oil & Grease (O&G) | 100 mg/L |

Chemical Oxygen Demand (COD) in excess of 300 mg/L may be used in lieu of BOD. Ammonia nitrogen (NH3-N) in excess of 15 mg/L may be used in lieu of TKN. These substitutions are at the discretion of the WRF Director.

C. Prohibitive Waste Charges

Prohibitive waste charges for each pollutant discharged in excess of permit or ordinance limits shall be $25.00/day for Class B permit holders and $50.00/day for Class A permit holders.

Prohibitive waste charges shall double if discharges are slug loads. A slug is defined as a wastewater discharge which exceeds, in pollutant concentration, allowed or permitted concentrations as set forth in Chapters 118-342, 118-343, or those contained in this discharge permit by more than 5x. A discharge with pH outside the allowable range by more than one (1) S.U. or a flow rate and/or mass loading in excess of 2x the maximum limit established by permit shall also be a slug.

Payment of fees and charges does not preclude other enforcement action and may not be paid in lieu of compliance with discharge limitations.

D. Payment Shall Be Made To:

City of Des Moines Treasurer's Office
P.O. Box 1633
Des Moines, IA 50306-1633

PART 4 - SPECIAL CONDITIONS

A. Monitoring Facilities

1. The permittee shall furnish and maintain the following equipment:

a. Wastewater flow meters. The flow meters which measure the effluent flow from the Main Detention Tank and the South Cargo Tanks shall be maintained in proper operating condition to include routine calibration. Calibration of flow measurement equipment shall be once/year when a wastewater flow meter is used or as recommended by manufacturer.

b. Flow control valve. The flow control valve which controls the rate of discharge from the detention tanks to the sanitary sewer shall be maintained in proper operating condition at all times during de-icing season.

c. Glycol Storage at East Cargo. Stormwater collected from the Glycol Storage Area at East Cargo shall be collected in underground storage tanks. Authorization from the WRF must be received each time these tanks discharge to the sanitary sewer system. Flow restrictions may be imposed if appropriate.

d. Pump station. If needed for collection of glycol or acetate contaminated water outside the detention tanks collection system, a pump station shall be provided at permittee's expense and maintained in proper working order with a means for flow measurement or estimation.

2. Sampling locations for any structure or area not covered by Part 1.A above which contains glycol or acetate contaminated water shall be at their discharge into the sanitary sewer and at any point prior to dilution with other sanitary sewer flows.

B. Compliance Schedule

None

PART 5 - STANDARD CONDITIONS

A. General Conditions

1. SEVERABILITY
The provisions of this permit are severable, and if any provision of this permit, or the application of any provisions of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby. (Chapter 118-322)

2. DUTY TO COMPLY
You must comply with the terms, conditions, and limits of this permit and of city ordinance. (Chapters 118-321 and 118-376)

3. DUTY TO MITIGATE
The permittee shall take all reasonable steps to minimize, correct, or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting the WRF, collection system, human health or environment. (Chapter 118-349)

4. CHANGES RESULTING IN NEW OR INCREASED POLLUTANTS
New or increased contributions of pollutants or changes in the nature of pollutant discharged to the WRF, whether due to changes in production, activity, flow or construction, shall require ninety (90) days prior approval by the WRA Director. (Chapter 118-370(11))

5. PERMIT MODIFICATION OR REVOCATION
This permit may be modified or revoked for causes specified in Chapters 118-373 and 118-402.

6. PERMIT TRANSFER
The permittee shall not reassign or transfer this permit. New owners must apply for a new wastewater discharge permit sixty (60) days prior to a change of ownership. (Chapter 118-374)

7. AUTOMATIC PERMIT EXTENSION
Expired permits shall remain effective and enforceable until the permit is reissued unless the permittee is notified of permit termination by the WRA Director. (Chapter 118-372)

8. INSPECTION OF PREMISES, RECORDS, EQUIPMENT, METHODS AND DISCHARGES
You must permit authorized representatives of the City of Des Moines to inspect and sample in accordance with Chapter 118-380.

9. RECORDS RETENTION

The permittee shall retain and preserve all records and reports related to wastewater discharge in accordance with Chapter 118-380(3). For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

(a) The exact place, date, and time of sampling;
(b) The dates the analyses were performed;
(c) The person(s) who performed the analyses;
(d) The analytical techniques or methods used; and
(e) The results of all such analyses.

10. CONFIDENTIAL INFORMATION

No information shall be confidential except as specified in Chapters 118-381 and 118-382.

11. DILUTION

The permittee shall not increase the use of potable or process water or, in any way, attempt to dilute a discharge as a partial or complete substitute for adequate treatment to achieve compliance with limitations contained in this permit. (Chapter 118-348)

12. ANNUAL PUBLICATION

A list of all users which significantly violated pretreatment standards or requirements (including permit requirements) during the twelve (12) previous months shall be annually published in the largest daily newspaper within the service area. (Chapter 118-396)

13. CIVIL AND CRIMINAL PENALTIES

Violation of pretreatment standards and requirements, administrative orders, or compliance schedules may subject the permittee to civil and criminal penalties contained in Chapter 118-400 and Iowa Code 364.22(1).

B. Operation and Maintenance of Pollution Controls

1. PROPER OPERATION AND MAINTENANCE

The permittee shall continuously operate in an efficient manner and maintain in good working order all pretreatment facilities and control systems required by this permit. Proper operation and maintenance includes but is not limited to: effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls including appropriate quality assurance procedures. (Chapter 118-347)

2. DUTY TO HALT OR REDUCE ACTIVITY

Users shall control production or discharges to the extent necessary to maintain compliance with permit conditions upon reduction, loss or failure of its pretreatment facility. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. (Chapter 118-349(e))

3. BYPASS

Anticipated bypass is prohibited without alternative treatment and notice. Unanticipated bypass is prohibited without notice and unless it is unavoidable to prevent loss of life, personal injury or severe property damage or no feasible alternatives exist. (Chapter 118-351)

4. PROPER DISPOSAL OF PRETREATMENT WASTES

Storage, handling, disposal and transportation of materials removed from pretreatment facilities shall be done according to all applicable Federal, State and local regulations that pertain to the type and/or class of waste generated. These materials are not acceptable for disposal at the WRF unless specifically approved by the WRA Director. (Chapter 118-347(f))

# Appendix B

## List of Co-Permittees

# SWPPP Co-Permittees List

| Facility | Phone Number | Contact Person |
|---|---|---|
| Des Moines Airport Authority | 515-256-5160 | Bryan Belt |
| Allegiant Airlines | 515-991-6715 | MiMi Thongsoum |
| American Airlines | 515-256-5165 | Sue Massey |
| Delta | 515-256-5764 | Jim Grabill |
| Frontier | 515-256-5379 | Michael Hammer |
| Southwest | 515-256-5630 | Sally Housholder |
| United Airlines | 515-256-5200 | Dustin Power |
| Des Moines Flying Service | 515-256-5305 | Josh Boyd |
| FDSM – Des Moines Airport Traffic Control Tower | 515-289-4822 | Larry Arenholz |
| FDSM – Des Moines Airport Surveillance Radar | 515-289-4822 | Larry Arenholz |
| FDSM - Runway 31 ALSF | 515-289-4822 | Larry Arenholz |
| FDSM – Runway 31 Glideslope | 515-289-4822 | Larry Arenholz |
| FDSM – Runway 31 Localizer | 515-289-4822 | Larry Arenholz |
| FDSM – Remote Transmitter/Receiver | 515-289-4822 | Larry Arenholz |
| Elliott Aviation | 515-285-6551 | Denny Brown |
| Federal Express | 515-256-5975 | Teresa Valenta |
| United Parcel Service | 502-329-3913 | Shane Seely |
| Meredith Corporation Aviation Dept. | 515-282-2252 | Ryan Campbell |
| Endeavor Air | 515-953-7911 | Dewayne Keating |
| Signature Flight Support | 515-256-5330 | Sean Kuhl |
| Principal Financial Group Aviation Dept. | 515-256-5433 | Daryl Bartek |
| Avis | 515-256-5959 | Sterling Shadd |
| Budget | 515-256-5959 | Sterling Shadd |
| Dollar | 515-256-5862 | Robert Clubine |
| Enterprise/National/Alamo | 515-256-5665 | David Ryan |
| Hertz | 515-256-5904 | Robert Clubine |

# Appendix C

## Non-Stormwater Discharge Assessment and Certification

# NON-STORM WATER DISCHARGE ASSESSMENT AND CERTIFICATION

**Worksheet #5**
**Completed by:** Katie Goff
**Title:** Environmental Scientist
**Date:**

| Date of Test or Evaluation | Outfall Directly Observed During the Test (identify as indicated on the site map) | Method Used to Test or Evaluate Discharge | Describe Results from Test for the Presence of Non-Storm Water Discharge | Identify Potential Significant Sources | Name of Person Who Conducted the Test or Evaluation |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

**CERTIFICATION**

**I, _____ (responsible corporate official), certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.**

| A. Name & Official Title (type or print) | B. Area Code and Telephone No. |
|---|---|
| Cole Steffes, Project Engineer | 515-256-5858 |
| **C. Signature** | **D. Date Signed** |
| | |

# Appendix D

## Sampling Parameters, Frequencies, and Effluent Limits

**DMAA - NPDES Individual Permit**
**Part IV: Monitoring and Effluent Limitations**

## Outfall 001

East of Fleur Drive, Lat 41.536766 Long -93.644849

| Parameter | Monitoring Frequency | Monitoring Period | Sample Type | Effluent Limit | |
|---|---|---|---|---|---|
| | | | | Monthly Avg | Daily Max. |
| Total BTEX | 1/Month | 12 months/year - when a discharge is occurring | Grab | -- | -- |
| Oil & Grease | 1/Month | 12 months/year - when a discharge is occurring | Grab | 10.0 mg/l | 15.0 mg/l |
| CBOD5 | 1/Month | 12 months/year - when a discharge is occurring | Grab | 100 mg/l | 150 mg/l |
| Flow | 1/Month | 12 months/year - when a discharge is occurring | instantaneous | -- | -- |

## Outfall 002

East of SW 42nd, Lat 41.535955 N, Lat -93.674015 W

| Parameter | Monitoring Frequency | Monitoring Period | Sample Type | Effluent Limit | |
|---|---|---|---|---|---|
| | | | | Monthly Avg | Daily Max. |
| Total BTEX | 1/Month | 12 months/year - when a discharge is occurring | Grab | -- | -- |
| Oil & Grease | 1/Month | 12 months/year - when a discharge is occurring | Grab | 10.0 mg/l | 15.0 mg/l |
| Flow | 1/Month | 12 months/year - when a discharge is occurring | instantaneous | -- | -- |

## Outfall 003

North of Army Post Road and west of SW 28th Ct Lat 41.521305, Long -93.656368

| Parameter | Monitoring Frequency | Monitoring Period | Sample Type | Effluent Limit | |
|---|---|---|---|---|---|
| | | | | Monthly Avg | Daily Max. |
| Total BTEX | 1/Month | 12 months/year - when a discharge is occurring | Grab | -- | -- |
| Oil & Grease | 1/Month | 12 months/year - when a discharge is occurring | Grab | 10.0 mg/l | 15.0 mg/l |
| Flow | 1/Month | 12 months/year - when a discharge is occurring | instantaneous | -- | -- |

## Outfall 001 - Oct 1 through May 31 (Deicing Season)

East of Fleur Drive, Lat 41.536766 Long -93.644849

| Parameter | Monitoring Frequency | Monitoring Period | Sample Type | Effluent Limit | |
|---|---|---|---|---|---|
| | | | | Monthly Avg | Daily Max. |
| Total BTEX | 1/Month | Oct 1 through May 31 - when a discharge is occurring | Grab | -- | -- |
| Oil & Grease | 1/Month | Oct 1 through May 31 - when a discharge is occurring | Grab | 10.0 mg/l | 15.0 mg/l |
| CBOD5 | 1/ week | Oct 1 through May 31 - when a discharge is occurring | Grab | 100 mg/l | 150 mg/l |
| Ethylene Glycol | 2/ week | Oct 1 through May 31 - when a discharge is occurring | Grab | 125.0 mg/l | 185 mg/l |
| Propylene Glycol | 2/ week | Oct 1 through May 31 - when a discharge is occurring | Grab | 98.0 mg/l | 150.0 mg/l |
| Dissolved Oxygen | 1/ 2 weeks | Oct 1 through May 31 - when a discharge is occurring | Grab | -- | -- |
| TSS | 1/ 2 weeks | Oct 1 through May 31 - when a discharge is occurring | Grab | -- | -- |
| pH | 1/ 2 weeks | Oct 1 through May 31 - when a discharge is occurring | Grab | 6.5 to 9.0 | |
| Dissolved Oxygen | 1/ 2 weeks | Oct 1 through May 31 - when a discharge is occurring | Grab | Minimum of 5.0 mg/l at all times | |
| Flow | 1/ 2 weeks | Oct 1 through May 31 - when a discharge is occurring | instantaneous | -- | -- |

**DMAA - NPDES Individual Permit**
**Part IV: Monitoring and Effluent Limitations**

## Outfall 001 - Limits for $CBOD_5$

| Month | Monitoring Frequency | Monitoring Period | Sample Type | Effluent Limit | |
|---|---|---|---|---|---|
| | | | | Monthly Avg | Daily Max. |
| October | 1/ week | Oct 1 through May 31 - when a discharge is occurring | Grab | 100 mg/l | 150 mg/l |
| November | 1/ week | Oct 1 through May 31 - when a discharge is occurring | Grab | 100 mg/l | 150 mg/l |
| December | 1/ week | Oct 1 through May 31 - when a discharge is occurring | Grab | 100 mg/l | 150 mg/l |
| January | 1/ week | Oct 1 through May 31 - when a discharge is occurring | Grab | 100 mg/l | 150 mg/l |
| February | 1/ week | Oct 1 through May 31 - when a discharge is occurring | Grab | 100 mg/l | 150 mg/l |
| March | 1/ week | Oct 1 through May 31 - when a discharge is occurring | Grab | 100 mg/l | 150 mg/l |
| April | 1/ week | Oct 1 through May 31 - when a discharge is occurring | Grab | 100 mg/l | 150 mg/l |
| May | 1/ week | Oct 1 through May 31 - when a discharge is occurring | Grab | 100 mg/l | 140 mg/l |

## Outfalls 002 and 003 - Oct 1 through May 31 (Deicing Season)

East of SW 42nd, Lat 41.535955 N, Lat -93.674015 W
North of Army Post Road and west of SW 28th Ct Lat 41.521305, Long -93.656368

| Parameter | Monitoring Frequency | Monitoring Period | Sample Type | Effluent Limit | |
|---|---|---|---|---|---|
| | | | | Monthly Avg | Daily Max. |
| Total BTEX | 1/Month | Oct 1 through May 31 - when a discharge is occurring | Grab | -- | -- |
| Oil & Grease | 1/Month | Oct 1 through May 31 - when a discharge is occurring | Grab | 10.0 mg/l | 15.0 mg/l |
| CBOD5 | 1/ 2 weeks | Oct 1 through May 31 - when a discharge is occurring | Grab | 100 mg/l | 150 mg/l |
| Ethylene Glycol | 1/ 2 weeks | Oct 1 through May 31 - when a discharge is occurring | Grab | 185.0 mg/l | 185.0 mg/l |
| Propylene Glycol | 1/ 2 weeks | Oct 1 through May 31 - when a discharge is occurring | Grab | 98.0 mg/l | 355.0 mg/l |
| Dissolved Oxygen | 1/ 2 weeks | Oct 1 through May 31 - when a discharge is occurring | Grab | -- | -- |
| TSS | 1/ 2 weeks | Oct 1 through May 31 - when a discharge is occurring | Grab | -- | -- |
| pH | 1/ 2 weeks | Oct 1 through May 31 - when a discharge is occurring | Grab | 6.5 to 9.0 | |
| Dissolved Oxygen | 1/ 2 weeks | Oct 1 through May 31 - when a discharge is occurring | Grab | Minimum of 5.0 mg/l at all times | |
| Flow | 1/ 2 weeks | Oct 1 through May 31 - when a discharge is occurring | instantaneous | -- | -- |

## Basins to Sanitary

Discharge from storage basins to WRA through sanitary sewer system

| Parameter | Monitoring Frequency | Monitoring Period | Sample Type |
|---|---|---|---|
| Pumpage Volume | 1/day | During periods of discharge to sanitary | 24 - hour |
| Storage basin level | 1/day | During periods of discharge to sanitary | - |
| Rainfall | 1/day | During periods of discharge to sanitary | 24 - hour |

NOTES:
Analytical results are to be sumbitted quarterly in IDNR provided electronic format.

If there is no discharge during a specified time period, no sampling is required for that period.

Samples shall be observed for color, odor, clarity, floating solids, settleable solids, suspended solids, foam, oil sheen and other obvious indicators of storm water pollution. These

A sampling waiver may be granted by the Department (IDNR) if adverse weather conditions prohibit sample collection (e.g high winds, blizzard conditions, etc).

# Appendix E

## Sampling Data

DES MOINES INTERNATIONAL AIRPORT
STORMWATER ANALYSIS REPORTS
2019 SUMMARY

LOCATION KEY

| | | | |
|---|---|---|---|
| Yeader #1 | Yeader Creek & Fleur | Frink #1 | Frink Creek & SW 42nd |
| Yeader #2 | Yeader Creek & SW 9th | Frink #2 | Frink Creek & Park Ave. |
| Yeader #3 | Yeader Creek & SE 5th | Middle #1 | Army Post Road |
| Yeader #4 | Yeader Creek & Indianola Rd | | |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | TSS | OIL & GREASE | PROP GLYCOL | ETH GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | ug/L | ug/L | ug/L |
| 01/11/19 | Frink#1 | 88 | 7.9 | 12.7 | | < 17 | | 8.0 | < 5 | 1.7 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 01/22/19 | Frink#1 | 38 | 7.8 | 12.8 | | < 12 | | 2 | | 1.6 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **63** | **7.9** | **12.8** | | **14.5** | | **5** | **5** | **1.7** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 01/11/19 | Middle#1 | 18 | 8.1 | 12.8 | | < 17 | | 2 | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 01/22/19 | Middle#1 | | | | | | | | | | | | | | |
| **MONTHLY AVERAGE** | | **18** | **8.1** | **12.8** | | **17.0** | | **2** | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 01/02/19 | Yeader#1 | 14 | 7.6 | 9.7 | | 81 | | 7.6 | | 55.3 | 2.3 | | | | |
| 01/04/19 | Yeader#1 | 14 | | 8.3 | | | | | | 22.3 | < 1.0 | | | | |
| 01/09/19 | Yeader#1 | 14 | | 10.5 | | | | | | 31.5 | < 1.0 | | | | |
| 01/11/19 | Yeader#1 | 14 | 7.7 | 9.6 | | 20 | | 12 | < 5 | 8.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 01/15/19 | Yeader#1 | 24 | 7.6 | 9.5 | | 123 | | 28 | | 48.6 | 1.5 | | | | |
| 01/17/19 | Yeader#1 | 9 | | 9.1 | | | | | | 39.6 | 2.3 | | | | |
| 01/22/19 | Yeader#1 | 18 | 7.5 | 8.9 | | 40 | | 23 | | 18.9 | < 1.0 | | | | |
| 01/24/19 | Yeader#1 | 14 | | 11.0 | | | | | | < 1.0 | < 1.0 | | | | |
| 01/29/19 | Yeader#1 | | | 10.4 | | | | | | 4.9 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **15** | **7.6** | **9.7** | | **66.0** | | **18** | **5** | **25.6** | **1.3** | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | TSS | OIL & GREASE | ROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | ug/L | ug/L | ug/L |
| 02/06/19 | Frink#1 | 107 | 7.8 | 12.5 | | 78 | | 5.1 | < 5 | 35.5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 02/19/19 | Frink#1 | 45 | 8.0 | 12.6 | < 12 | 2 | | | | | | | | | |
| 02/22/19 | Frink#1 | 38 | | | | | | < 1.0 | < 1.0 | | | | | | |
| **MONTHLY AVERAGE** | | **63** | **7.9** | **12.6** | **45.0** | **4** | **5** | **18.3** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** | | |
| 02/06/19 | Middle#1 | 69 | 8.0 | 13.0 | < 14 | 4.2 | < 5 | 4.3 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 | | |
| 02/19/19 | Middle#1 | | | | | | | | | | | | | | |
| 02/26/19 | Middle#1 | 50 | 7.9 | 12.6 | < 17 | 2 | | 3.9 | < 1.0 | | | | | | |
| **MONTHLY AVERAGE** | | **60** | **8.0** | **12.8** | **15.5** | **3** | **5** | **4.1** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** | | |
| 02/01/19 | Yeader#1 | | 7.7 | 9.4 | 35 | 14 | | < 1.0 | < 1.0 | | | | | | |
| 02/06/19 | Yeader#1 | 38 | 7.5 | 10.1 | **246** | 19 | < 5 | 91.2 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 | | |
| 02/08/19 | Yeader#1 | 24 | | 9.9 | | | | 43.9 | < 1.0 | | | | | | |
| 02/11/19 | Yeader#1 | 24 | 7.6 | 9.4 | 90 | 21 | | 11.6 | < 1.0 | | | | | | |
| 02/14/19 | Yeader#1 | 50 | | 9.0 | | | | 1.9 | < 1.0 | | | | | | |
| 02/19/19 | Yeader#1 | 18 | 7.5 | 9.9 | **154** | 19 | | 42.5 | < 1.0 | | | | | | |
| 02/21/19 | Yeader#1 | 18 | | 7.9 | | | | 37.9 | 8.9 | | | | | | |
| 02/26/19 | Yeader#1 | 24 | 7.3 | 9.3 | **312** | 22 | | 53.9 | 1.8 | | | | | | |
| 02/28/19 | Yeader#1 | 14 | | 9.7 | | | | 12.0 | < 1.0 | | | | | | |
| **MONTHLY AVERAGE** | | **26** | **7.5** | **9.4** | **167.4** | **19** | **5** | **32.9** | **2.0** | **1.0** | **1.0** | **1.0** | **2.0** | | |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | TSS | OIL & GREASE | PROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | ug/L | ug/L | ug/L |
| 03/08/19 | Frink#1 | 125 | 8.0 | 12.9 | | < 15 | | 2 | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 03/19/19 | Frink#1 | 149 | 7.9 | 9.9 | | 13 | | 7.7 | | 5.4 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **137** | **7.9** | **11.4** | | **14.0** | | **5** | **5** | **3.2** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 03/08/19 | Middle#1 | 38 | 7.9 | 11.5 | | < 15 | | 3.5 | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 03/19/19 | Middle#1 | 38 | 7.8 | 11.6 | | < 15 | | 11 | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **38** | **7.9** | **11.6** | | **15.0** | | **7** | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 03/06/19 | Yeader#1 | 9 | | 8.3 | | | | | | 3.2 | < 1.0 | | | | |
| 03/08/19 | Yeader#1 | 24 | 7.5 | 8.5 | | 93 | | 72 | < 5 | 8.2 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 03/11/19 | Yeader#1 | 69 | | 10.3 | | | | | | 201 | < 1.0 | | | | |
| 03/15/19 | Yeader#1 | 45 | 7.3 | 10.4 | | **673** | | 17 | | 293 | 8.3 | | | | |
| 03/19/19 | Yeader#1 | 14 | 7.3 | 8.9 | | **582** | | 19 | | 154 | < 1.0 | | | | |
| 03/21/19 | Yeader#1 | 24 | | 8.1 | | | | | | 157 | < 1.0 | | | | |
| 03/27/19 | Yeader#1 | 24 | 7.7 | 7.9 | | **290** | | 21 | | 36.4 | < 1.0 | | | | |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 03/29/19 | Yeader#1 | 14 | | 7.7 | | | | | | 28.6 | 1.7 | | | | |
| **MONTHLY AVERAGE** | | **28** | **7.5** | **8.8** | | **409.5** | | **32** | **5** | **110.2** | **2.0** | **1.0** | **1.0** | **1.0** | **2.0** |

*April through July sampling not completed

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | TSS | OIL & GREASE | PROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | ug/L | ug/L | ug/L |
| 07/12/19 | Frink#1 | 88 | | | | | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 07/25/19 | Frink#1 | 69 | | | | | | | | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **79** | | | | | | | **5** | | | **1.0** | **1.0** | **1.0** | **2.0** |
| 07/12/19 | Middle#1 | 9 | | | | | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 07/25/19 | Middle#1 | 14 | | | | | | | | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **11** | | | | | | | **5** | | | **1.0** | **1.0** | **1.0** | **2.0** |
| 07/12/19 | Yeader#1 | 14 | | | | < 14 | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 07/25/19 | Yeader#1 | 9 | | | | < 10 | | | | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **11** | | | | **12.0** | | | **5** | | | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | TSS | OIL & GREASE | PROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | ug/L | ug/L | ug/L |
| 08/02/19 | Frink#1 | 69 | | | | | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **69** | | | | | | | **5** | | | **1.0** | **1.0** | **1.0** | **2.0** |
| 08/02/19 | Middle#1 | 18 | | | | | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **18** | | | | | | | **5** | | | **1.0** | **1.0** | **1.0** | **2.0** |
| 08/02/19 | Yeader#1 | 14 | | | | < 10 | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **14** | | | | **10.0** | | | **5** | | | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | TSS | OIL & GREASE | PROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | ug/L | ug/L | ug/L |
| 09/20/19 | Frink#1 | 300 | | | | | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **300** | | | | | | | **5** | | | **1.0** | **1.0** | **1.0** | **2.0** |
| 09/20/19 | Middle#1 | 24 | | | | | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **24** | | | | | | | **5** | | | **1.0** | **1.0** | **1.0** | **2.0** |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 09/20/19 | Yeader#1 | 14 | | | < 13 | | | < 5 | | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **14** | | | **13.0** | | | **5** | | | | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | TSS | OIL & GREASE | PROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | ug/L | ug/L | ug/L |
| 10/01/19 | Frink#1 | 125 | 8.0 | 8.0 | | < 16 | | 2.0 | < 5 | 2.2 | 3.8 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 10/14/19 | Frink#1 | 197 | 8.1 | 9.4 | | < 12 | | 2.0 | | < 1.0 | < 1.0 | | | | |
| 10/30/19 | Frink#1 | 107 | 8.0 | 12.0 | | < 16 | | < 1.2 | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **143** | **8.0** | **9.8** | | **14.7** | | **2** | **5** | **1.4** | **1.9** | **1.0** | **1.0** | **1.0** | **2.0** |
| 10/01/19 | Middle#1 | 38 | 8.4 | 10.5 | | < 16 | | 2.0 | < 5 | 5.4 | 7.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 10/14/19 | Middle#1 | 45 | 8.2 | 10.3 | | < 12 | | 9.1 | | < 1.0 | < 1.0 | | | | |
| 10/30/19 | Middle#1 | 24 | 8.4 | 13.6 | | < 16 | | 2.0 | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **36** | **8.3** | **11.5** | | **14.7** | | **4** | **5** | **2.5** | **3.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 10/01/19 | Yeader#1 | 30 | 7.5 | 6.2 | | 56 | | 6.7 | < 5 | 3.6 | 5.1 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 10/03/19 | Yeader#1 | 220 | | 8.0 | | | | | | < 1.0 | < 1.0 | | | | |
| 10/08/19 | Yeader#1 | 88 | 7.4 | 7.0 | | 40 | | 10 | | < 1.0 | < 1.0 | | | | |
| 10/11/19 | Yeader#1 | 88 | | 8.8 | | | | | | < 1.0 | < 1.0 | | | | |
| 10/14/19 | Yeader#1 | 45 | 7.5 | 8.4 | | < 12 | | 6.8 | | < 1.0 | < 1.0 | | | | |
| 10/18/19 | Yeader#1 | 38 | | 8.1 | | | | | | < 1.0 | < 1.0 | | | | |
| 10/21/19 | Yeader#1 | 88 | 7.9 | 9.0 | | < 11 | | 16 | | < 1.0 | < 1.0 | | | | |
| 10/25/19 | Yeader#1 | 24 | | 9.4 | | | | | | < 1.0 | < 1.0 | | | | |
| 10/30/19 | Yeader#1 | 14 | 7.7 | 9.8 | | < 16 | | 5.0 | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **71** | **7.6** | **8.3** | | **27.0** | | **9** | **5** | **1.3** | **1.5** | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | TSS | OIL & GREASE | PROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | ug/L | ug/L | ug/L |
| 11/12/19 | Frink#1 | 69 | 7.9 | 13.5 | | < 17 | | 2 | < 4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 11/25/19 | Frink#1 | 69 | 8.0 | 12.6 | | < 12 | | 2.4 | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **69** | **8.0** | **13.0** | | **14.5** | | **2** | **4** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 11/12/19 | Middle#1 | 45 | 8.3 | 13.8 | | < 17 | | 2 | < 4 | < 1.0 | 4.3 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 11/25/19 | Middle#1 | 38 | 8.3 | 12.7 | | < 12 | | 2 | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **42** | **8.3** | **13.3** | | **14.5** | | **2** | **4** | **1.0** | **2.7** | **1.0** | **1.0** | **1.0** | **2.0** |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/01/19 | Yeader#1 | 38 | | 9.7 | | | | | < 1.0 | < 1.0 | | | | | |
| 11/05/19 | Yeader#1 | 9 | 7.7 | 8.9 | | < 14 | | 9 | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 11/08/19 | Yeader#1 | 14 | | 9.6 | | | | | | < 1.0 | < 1.0 | | | | |
| 11/12/19 | Yeader#1 | 14 | 7.8 | 10.3 | | < 17 | | 11 | | < 1.0 | < 1.0 | | | | |
| 11/15/19 | Yeader#1 | 38 | | 9.1 | | | | | | < 1.0 | < 1.0 | | | | |
| 11/19/19 | Yeader#1 | 9 | 7.6 | 9.1 | | < 14 | | 11 | | < 1.0 | < 1.0 | | | | |
| 11/22/19 | Yeader#1 | 9 | | 9.9 | | | | | | 6.0 | < 1.0 | | | | |
| 11/25/19 | Yeader#1 | 9 | 7.7 | 8.2 | | < 12 | | 12 | | < 1.0 | < 1.0 | | | | |
| 11/27/19 | Yeader#1 | 14 | | 9.4 | | | | | | 2.3 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **14** | **7.7** | **9.3** | | **14.3** | | **11** | **5** | **1.8** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | TSS | OIL & GREASE | PROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | ug/L | ug/L | ug/L |
| 12/10/19 | Frink#1 | 50 | 8.1 | 14.0 | | < 14 | | 2.7 | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 12/26/19 | Frink#1 | 18 | 8.0 | 13.6 | | < 17 | | 2.9 | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **34** | **8.1** | **13.8** | | **15.5** | | **3** | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 12/10/19 | Middle#1 | 54 | 8.4 | 14.2 | | < 14 | | < 1.2 | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 12/26/19 | Middle#1 | 9 | 8.3 | 15.5 | | < 17 | | 5.6 | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **31** | **8.4** | **14.8** | | **15.5** | | **3** | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 12/03/19 | Yeader#1 | 24 | 7.7 | 8.3 | | **206** | | 8.4 | < 5 | 92.8 | 2.8 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 12/06/19 | Yeader#1 | 9 | | 8.0 | | | | | | 17.1 | < 1.0 | | | | |
| 12/10/19 | Yeader#1 | 14 | 7.7 | 9.1 | | < 14 | | 12 | | < 1.0 | < 1.0 | | | | |
| 12/13/19 | Yeader#1 | 9 | | 8.2 | | | | | | < 1.0 | < 1.0 | | | | |
| 12/17/19 | Yeader#1 | 14 | 7.8 | 9.0 | | < 15 | | 7.3 | | < 1.0 | < 1.0 | | | | |
| 12/19/19 | Yeader#1 | 14 | | 8.5 | | | | | | < 1.0 | < 1.0 | | | | |
| 12/23/19 | Yeader#1 | 9 | | 7.8 | | | | | | < 1.0 | < 1.0 | | | | |
| 12/26/19 | Yeader#1 | 9 | 7.7 | 8.8 | | < 17 | | 8.7 | | < 1.0 | < 1.0 | | | | |
| 12/30/19 | Yeader#1 | 14 | 7.6 | 9.0 | | 74 | | 12 | | 22.9 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **13** | **7.7** | **8.5** | | **65.2** | | **10** | **5** | **15.4** | **1.2** | **1.0** | **1.0** | **1.0** | **2.0** |

DES MOINES INTERNATIONAL AIRPORT
STORMWATER ANALYSIS REPORTS
2018 SUMMARY

LOCATION KEY

| | | | |
|---|---|---|---|
| Yeader #1 | Yeader Creek & Fleur | Frink #1 | Frink Creek & SW 42nd |
| Yeader #2 | Yeader Creek & SW 9th | Frink #2 | Frink Creek & Park Ave. |
| Yeader #3 | Yeader Creek & SE 5th | Middle #1 | Army Post Road |
| Yeader #4 | Yeader Creek & Indianola Rd | | |

| DATE | LOCATION | FLOW GPM | pH S.U. | METER mg/L | COD mg/L | CBOD mg/L | NH3-N mg/L | TSS mg/L | OIL & GREASE mg/L | PROP GLYCOL mg/L | ETH GLYCOL mg/L | BENZENE ug/L | TOLUENE ug/L | ETHYL-BENZENE ug/L | TOTAL XYLENE ug/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01/10/18 | Frink#1 | | | | | | | | | | | | | | |
| 01/22/18 | Frink#1 | 431 | 8.8 | 10.5 | 125 | 82 | | 80 | | 59.9 | 4.6 | | | | |
| 01/30/18 | Frink#1 | 38 | | 11.7 | | | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **235** | **8.8** | **11.1** | **125.0** | **82.0** | | **80** | **5** | **59.9** | **4.6** | **1.0** | **1.0** | **1.0** | **2.0** |
| 01/10/18 | Middle#1 | 9 | 8.3 | 11.8 | 78 | 24 | | 2.0 | | 2.5 | 3.9 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 01/22/18 | Middle#1 | 30 | 7.8 | 11.5 | 53 | 23 | | 22 | | < 2.0 | 4.6 | | | | |
| 01/26/18 | Middle#1 | 5 | | | | | | | < 5 | | | | | | |
| **MONTHLY AVERAGE** | | **15** | **8.0** | **11.6** | **65.5** | **23.5** | | **12** | **5** | **2.3** | **4.3** | **1.0** | **1.0** | **1.0** | **2.0** |
| 01/03/18 | Yeader#1 | 9 | 8.2 | 13.0 | 29 | < 11 | | 6.7 | | < 1.0 | < 1.0 | | | | |
| 01/05/18 | Yeader#1 | 9 | | 11.9 | | | | | | < 2.0 | 3.9 | | | | |
| 01/10/18 | Yeader#1 | 14 | 7.8 | 9.6 | 451 | **322** | | 5.2 | < 5 | 208 | < 2.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 01/12/18 | Yeader#1 | 14 | | 13.0 | | | | | | 141 | < 2.0 | | | | |
| 01/17/18 | Yeader#1 | 14 | 7.9 | 11.1 | 67 | 48 | | 6.8 | | < 2.0 | 3.1 | | | | |
| 01/19/18 | Yeader#1 | 9 | | 8.3 | | | | | | 31.2 | 4.5 | | | | |
| 01/22/18 | Yeader#1 | 30 | 10.4 | 10.3 | 113 | 68 | | 80 | | 20.7 | 5.5 | | | | |
| 01/24/18 | Yeader#1 | 5 | | 11.1 | | | | | | < 1.0 | 8.2 | | | | |
| 01/25/18 | Yeader#1 | 5 | | 9.1 | 80 | 69 | | | | | | | | | |
| 01/30/18 | Yeader#1 | 5 | 8.1 | 10.1 | 58 | 34 | | 6.5 | | 5.1 | < 2.0 | | | | |
| 01/31/18 | Yeader#1 | 5 | | | 80 | 47 | | | | 18.1 | < 2.0 | | | | |
| **MONTHLY AVERAGE** | | **11** | **8.5** | **10.8** | **125.4** | **85.6** | | **21** | **5** | **43.0** | **3.4** | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | TSS | OIL & GREASE | ROPYLEN GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | ug/L | ug/L | ug/L |
| 02/07/18 | Frink#1 | 50 | 8.1 | 11.3 | < 20 | < 14 | | 2 | < 5 | < 2.0 | < 2.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 02/19/18 | Frink#1 | 237 | 7.9 | 11.0 | 87 | 28 | | 59 | | 8.7 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **144** | **8.0** | **11.1** | **53.5** | **21.0** | | **31** | **5** | **5.4** | **1.5** | **1.0** | **1.0** | **1.0** | **2.0** |
| 02/07/18 | Middle#1 | 9 | 7.9 | 12.8 | < 20 | < 14 | | 14 | < 5 | < 2.0 | < 2.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 02/19/18 | Middle#1 | 197 | 7.6 | 11.5 | 146 | | | 71 | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **103** | **7.7** | **12.1** | **83.0** | **14.0** | | **43** | **5** | **1.5** | **1.5** | **1.0** | **1.0** | **1.0** | **2.0** |
| 02/07/18 | Yeader#1 | 14 | 8.0 | 11.4 | 51 | 35 | | 9 | < 5 | < 2.0 | < 2.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 02/09/18 | Yeader#1 | 5 | | 11.5 | | | | | | < 2.0 | < 2.0 | | | | |
| 02/13/18 | Yeader#1 | 24 | 7.9 | 9.9 | 102 | 30 | | 31 | | < 2.0 | < 2.0 | | | | |
| 02/16/18 | Yeader#1 | 9 | | 11.0 | | | | | | 94.4 | < 1.0 | | | | |
| 02/19/18 | Yeader#1 | 69 | 7.5 | 10.4 | 187 | 78 | | 31 | | 39.9 | < 1.0 | | | | |
| 02/21/18 | Yeader#1 | 107 | | 11.1 | | | | | | 100 | < 1.0 | | | | |
| 02/26/18 | Yeader#1 | 14 | 7.6 | 9.5 | 590 | **407** | | 14 | | 77.2 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **35** | **7.8** | **10.7** | **232.5** | **137.5** | | **21** | **5** | **45.4** | **1.4** | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | TSS | OIL & GREASE | ROPYLEN GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | ug/L | ug/L | ug/L |
| 03/07/18 | Frink#1 | 69 | 8.2 | 11.1 | 163 | **116** | | 3 | < 5 | 65.1 | < 2.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 03/19/18 | Frink#1 | 69 | 8.1 | 10.0 | 774 | **484** | | 4 | | 344 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **69** | **8.1** | **10.6** | **468.5** | **300.0** | | **4** | **5** | **204.6** | **1.5** | **1.0** | **1.0** | **1.0** | **2.0** |
| 03/07/18 | Middle#1 | 9 | 8.3 | 12.3 | 31 | < 16 | | < 1.2 | < 5 | < 2.0 | < 2.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 03/19/18 | Middle#1 | 14 | 8.3 | 11.6 | 38 | < 10 | | 4 | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **11** | **8.3** | **12.0** | **34.5** | **13.0** | | **3** | **5** | **1.5** | **1.5** | **1.0** | **1.0** | **1.0** | **2.0** |
| 03/01/18 | Yeader#1 | 9 | | 8.9 | | | | | | 61.7 | < 1.0 | | | | |
| 03/07/18 | Yeader#1 | 14 | 7.8 | 10.1 | 406 | **287** | | 12 | < 5 | 70.7 | < 2.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 03/09/18 | Yeader#1 | 9 | | 9.6 | | | | | | 44.4 | < 1.0 | | | | |
| 03/12/18 | Yeader#1 | 14 | 7.7 | 9.1 | 314 | **203** | | 13 | | 61.7 | 85.3 | | | | |
| 03/14/18 | Yeader#1 | 18 | | 8.8 | | | | | | < 1.0 | < 1.0 | | | | |
| 03/19/18 | Yeader#1 | 14 | 7.7 | 9.4 | 264 | **178** | | 13 | | 30.8 | < 1.0 | | | | |
| 03/21/18 | Yeader#1 | 9 | | 9.6 | | | | | | 12.7 | < 1.0 | | | | |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 03/27/18 | Yeader#1 | 14 | 7.6 | 10.5 | 204 | **136** | | 20 | | 114 | < 1.0 | | | | |
| 03/29/18 | Yeader#1 | 14 | | 9.8 | | | | | | 108 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **13** | **7.7** | **9.5** | **297.0** | **201.0** | | **15** | **5** | **56.1** | **10.5** | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | TSS | OIL & GREASE | ROPYLEN GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | ug/L | ug/L | ug/L |
| 04/03/18 | Frink#1 | 69 | 8.3 | 12.0 | 45 | < 16 | | 5.2 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 04/17/18 | Frink#1 | 107 | 7.9 | 9.8 | 23 | < 13 | | 6.8 | | < 1.0 | 1.5 | | | | |
| 04/30/18 | Frink#1 | 69 | 8.2 | 9.9 | 34 | < 11 | | 2 | | < 2.0 | < 2.0 | | | | |
| **MONTHLY AVERAGE** | | **82** | **8.1** | **10.6** | **34.0** | **13.3** | | **5** | **5** | **1.3** | **1.5** | **1.0** | **1.0** | **1.0** | **2.0** |
| 04/03/18 | Middle#1 | 14 | 8.6 | 12.5 | 39 | < 16 | | 3.2 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 04/17/18 | Middle#1 | 24 | 8.2 | 10.4 | 20 | < 14 | | 5.6 | | < 1.0 | 1.1 | | | | |
| 04/30/18 | Middle#1 | 9 | 8.6 | 12.1 | 26 | < 11 | | 2 | | < 2.0 | < 2.0 | | | | |
| **MONTHLY AVERAGE** | | **16** | **8.4** | **11.7** | **28.3** | **13.7** | | **4** | **5** | **1.3** | **1.4** | **1.0** | **1.0** | **1.0** | **2.0** |
| 04/03/18 | Yeader#1 | 18 | 7.7 | 10.4 | 124 | 50 | | 71 | < 5.0 | 2.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 04/05/18 | Yeader#1 | 14 | | 8.9 | | | | | | 2.6 | < 2.0 | | | | |
| 04/11/18 | Yeader#1 | 18 | 7.8 | 8.6 | 95 | 59 | | 13 | | < 1.0 | 4.2 | | | | |
| 04/13/18 | Yeader#1 | 14 | | 8.6 | | | | | | < 1.0 | 3.2 | | | | |
| 04/17/18 | Yeader#1 | 24 | 7.6 | 9.4 | 145 | 81 | | 12 | | 11.7 | 2.0 | | | | |
| 04/19/18 | Yeader#1 | 14 | | 8.9 | | | | | | 6.9 | 6.4 | | | | |
| 04/23/18 | Yeader#1 | 38 | 7.5 | 8.1 | 128 | 79 | | 15 | | < 1.0 | < 1.0 | | | | |
| 04/27/18 | Yeader#1 | 14 | | 9.2 | | | | | | < 1.0 | < 1.0 | | | | |
| 04/30/18 | Yeader#1 | 24 | 7.6 | 8.5 | | 44 | | 13 | | < 2.0 | < 2.0 | | | | |
| **MONTHLY AVERAGE** | | **20** | **7.6** | **9.0** | **123.0** | **62.6** | | **25** | **5** | **3.3** | **2.5** | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | TSS | OIL & GREASE | ROPYLEN GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | ug/L | ug/L | ug/L |
| 05/14/18 | Frink#1 | 300 | 7.8 | 8.9 | 20 | < 14 | | 36 | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 05/29/18 | Frink#1 | 45 | 8.2 | 8.1 | < 20 | < 15 | | 18 | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **173** | **8.0** | **8.5** | **20.0** | **14.5** | | **27** | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 05/14/18 | Middle#1 | 38 | 7.9 | 9.0 | 22 | < 14 | | 36 | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 05/29/18 | Middle#1 | 9 | 8.4 | 12.6 | 38 | < 15 | | 5.2 | | < 1.0 | < 1.0 | | | | |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MONTHLY AVERAGE** | | **23** | **8.2** | **10.8** | **30.0** | **14.5** | | **21** | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 05/04/18 | Yeader#1 | 88 | | 8.5 | | | | | | < 2.0 | < 2.0 | | | | |
| 05/08/18 | Yeader#1 | 38 | | 7.4 | | | | | | < 2.0 | < 2.0 | | | | |
| 05/11/18 | Yeader#1 | 107 | 7.5 | 8.8 | 49 | 22 | | 24 | < 5 | < 2.0 | < 2.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 05/14/18 | Yeader#1 | 69 | 7.4 | 7.8 | 69 | 26 | | 16 | < 5 | < 1.0 | < 1.0 | | | | |
| 05/18/18 | Yeader#1 | 14 | | 8.2 | | | | | | < 1.0 | < 1.0 | | | | |
| 05/22/18 | Yeader#1 | 30 | 7.5 | 7.6 | 25 | 22 | | 16 | | < 1.0 | 2.3 | | | | |
| 05/24/18 | Yeader#1 | 24 | | 7.5 | | | | | | < 1.0 | < 1.0 | | | | |
| 05/29/18 | Yeader#1 | 14 | 7.7 | 7.5 | 40 | < 15 | | 7.5 | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **48** | **7.5** | **7.9** | **45.8** | **21.3** | | **16** | **5** | **1.4** | **1.5** | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | TSS | OIL & GREASE | ROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | ug/L | ug/L | ug/L |
| 06/12/18 | Frink#1 | 197 | | | | | | | < 4 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **197** | | | | | | | **4** | | | **1.0** | **1.0** | **1.0** | **2.0** |
| 06/12/18 | Middle#1 | 30 | | | | | | | < 4 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **30** | | | | | | | **4** | | | **1.0** | **1.0** | **1.0** | **2.0** |
| 06/01/18 | Yeader#1 | 14 | | 7.4 | | | | | | < 2.0 | < 2.0 | | | | |
| 06/12/18 | Yeader#1 | 50 | | | | | | | 4 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **14** | | **7.4** | | | | | **4** | **2.0** | **2.0** | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | TSS | OIL & GREASE | ROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | ug/L | ug/L | ug/L |
| 07/09/18 | Frink#1 | 69 | | | | | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **69** | | | | | | | **5** | | | **1.0** | **1.0** | **1.0** | **2.0** |
| 07/09/18 | Middle#1 | 24 | | | | | | | 6 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **24** | | | | | | | **6** | | | **1.0** | **1.0** | **1.0** | **2.0** |
| 07/09/18 | Yeader#1 | 50 | | | | | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **50** | | | | | | | **5** | | | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | TSS | OIL & GREASE | ROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | GPM | S.U. | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | ug/L | ug/L | ug/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 08/07/18 | Frink#1 | 149 | | | | | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **149** | | | | | | | **5** | | | **1.0** | **1.0** | **1.0** | **2.0** |
| 08/07/18 | Middle#1 | 197 | | | | | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **197** | | | | | | | **5** | | | **1.0** | **1.0** | **1.0** | **2.0** |
| 08/07/18 | Yeader#1 | 237 | | | | 12 | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **237** | | | | **12** | | | **5** | | | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | TSS | OIL & GREASE | ROPYLEN GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | ug/L | ug/L | ug/L |
| 09/06/18 | Frink#1 | 197 | | | | | | | 5.0 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **197** | | | | | | | **5** | | | **1.0** | **1.0** | **1.0** | **2.0** |
| 09/06/18 | Middle#1 | 69 | | | | | | | 5.0 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **69** | | | | | | | **5** | | | **1.0** | **1.0** | **1.0** | **2.0** |
| 09/06/18 | Yeader#1 | 50 | | | 22 | < 16 | | | < 5.0 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **50** | | | **22.0** | **16.0** | | | **5** | | | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | TSS | OIL & GREASE | ROPYLEN GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | ug/L | ug/L | ug/L |
| 10/02/18 | Frink#1 | 107 | 8.0 | 9.3 | | < 17 | | 2.8 | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 10/19/18 | Frink#1 | 107 | 8.0 | 9.8 | | < 13 | | 2.8 | | < 1.0 | < 1.0 | | | | |
| 10/29/18 | Frink#1 | 38 | 7.9 | 12.4 | | < 17 | | 2 | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **84** | **8.0** | **10.5** | | **15.7** | | **3** | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 10/02/18 | Middle#1 | 18 | 8.2 | 10.0 | | < 17 | | 2.8 | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 10/19/18 | Middle#1 | 24 | 8.3 | 10.4 | | < 13 | | 2.5 | | < 1.0 | < 1.0 | | | | |
| 10/29/18 | Middle#1 | 9 | 8.3 | 12.9 | | < 17 | | 2 | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **17** | **8.2** | **11.1** | | **15.7** | | **2** | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 10/02/18 | Yeader#1 | 38 | 7.6 | 6.8 | | 103 | | 10.0 | < 5 | 1.1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 10/05/18 | Yeader#1 | 14 | | 6.6 | | | | | | < 1.0 | < 1.0 | | | | |
| 10/09/18 | Yeader#1 | 560 | | 8.8 | | < 42 | | 16.0 | | < 1.0 | < 1.0 | | | | |
| 10/12/18 | Yeader#1 | 125 | | 8.0 | | | | | | < 1.0 | < 1.0 | | | | |
| 10/16/18 | Yeader#1 | 30 | | 8.7 | | | | | | < 1.0 | < 1.0 | | | | |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10/19/18 | Yeader#1 | 38 | 7.8 | 8.0 | | < 13 | | 7.2 | | < 1.0 | < 1.0 | | | | |
| 10/23/18 | Yeader#1 | 14 | | 7.9 | | < 16 | | 8.0 | | < 1.0 | < 1.0 | | | | |
| 10/26/18 | Yeader#1 | 9 | | 8.1 | | | | | | < 1.0 | < 1.0 | | | | |
| 10/29/18 | Yeader#1 | 9 | 7.7 | 8.2 | | < 17 | | 4.0 | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **93** | **7.7** | **7.9** | | **38.2** | | **9** | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | TSS | OIL & GREASE | ROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | ug/L | ug/L | ug/L |
| 11/16/18 | Frink#1 | 50 | 8.0 | 12.6 | | < 16 | | 2.8 | | < 1.0 | < 1.0 | | | | |
| 11/30/18 | Frink#1 | 50 | 8.2 | 12.9 | | < 15 | | 2 | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **50** | **8.1** | **12.7** | | **15.5** | | **2** | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 11/16/18 | Middle#1 | 14 | 8.2 | 11.9 | | < 16 | | 4 | | < 1.0 | < 1.0 | | | | |
| 11/30/18 | Middle#1 | 24 | 8.2 | 13.7 | | < 15 | | < 1.2 | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **19** | **8.2** | **12.8** | | **15.5** | | **3** | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 11/02/18 | Yeader#1 | 14 | | 8.6 | | | | | | < 1.0 | < 1.0 | | | | |
| 11/07/18 | Yeader#1 | 69 | 7.7 | 8.8 | | < 17 | | 4.4 | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 11/09/18 | Yeader#1 | 18 | | 9.0 | | | | | | < 1.0 | < 1.0 | | | | |
| 11/14/18 | Yeader#1 | 14 | | 8.9 | | | | | | < 1.0 | < 1.0 | | | | |
| 11/16/18 | Yeader#1 | 9 | 7.7 | 9.3 | | < 16 | | 4.8 | | < 1.0 | < 1.0 | | | | |
| 11/19/18 | Yeader#1 | 14 | 7.8 | 9.5 | | < 12 | | 4 | | < 1.0 | < 1.0 | | | | |
| 11/21/18 | Yeader#1 | 9 | | 10.3 | | | | | | < 1.0 | < 1.0 | | | | |
| 11/26/18 | Yeader#1 | 9 | | 9.9 | | | | | | < 1.0 | < 1.0 | | | | |
| 11/30/18 | Yeader#1 | 14 | 7.8 | 9.2 | | < 15 | | 6.4 | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **19** | **7.7** | **9.3** | | **15.0** | | **5** | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | TSS | OIL & GREASE | ROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | ug/L | ug/L | ug/L |
| 12/11/18 | Frink#1 | 125 | 8.0 | 12.5 | | < 15 | | 2.0 | | < 1.0 | < 1.0 | | | | |
| 12/26/18 | Frink#1 | 107 | 8.0 | 12.6 | | < 17 | | 25 | | 2.1 | < 1.0 | | | | |
| 12/28/18 | Frink#1 | 430 | | | | | | | < 7 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **221** | **8.0** | **12.5** | | **16.0** | | **14** | **7** | **1.6** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 12/11/18 | Middle#1 | 30 | 8.2 | 12.4 | | < 15 | | < 1.2 | | < 1.0 | < 1.0 | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/26/18 | Middle#1 | 167 | 8.1 | 12.6 | < 17 | 90 | | < 1.0 | < 1.0 | | | | |
| 12/28/18 | Middle#1 | 88 | | | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **95** | **8.1** | **12.5** | **16.0** | **46** | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 12/04/18 | Yeader#1 | 18 | 7.7 | 9.9 | 70 | 7.6 | < 5 | 49.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 12/07/18 | Yeader#1 | 14 | | 9.7 | | | | 7.5 | < 1.0 | | | | |
| 12/11/18 | Yeader#1 | 18 | 7.7 | 8.9 | < 15 | 8.0 | | < 1.0 | < 1.0 | | | | |
| 12/14/18 | Yeader#1 | 14 | | 9.8 | | | | < 1.0 | < 1.0 | | | | |
| 12/17/18 | Yeader#1 | 18 | 7.8 | 9.1 | 6 | 5.0 | | < 1.0 | < 1.0 | | | | |
| 12/21/18 | Yeader#1 | 14 | | 10.2 | | | | 5.3 | < 1.0 | | | | |
| 12/26/18 | Yeader#1 | 197 | 7.7 | 10.6 | 43 | 260 | | 6.9 | < 1.0 | | | | |
| 12/28/18 | Yeader#1 | 92 | | 10.7 | | | | 25.1 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **48** | **7.7** | **9.9** | **33.5** | **70** | **5** | **12.1** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |

DES MOINES INTERNATIONAL AIRPORT
STORMWATER ANALYSIS REPORTS
2017 SUMMARY

LOCATION KEY

| | | | |
|---|---|---|---|
| Yeader #1 | Yeader Creek & Fleur | Frink #1 | Frink Creek & SW 42nd |
| Yeader #2 | Yeader Creek & SW 9th | Frink #2 | Frink Creek & Park Ave. |
| Yeader #3 | Yeader Creek & SE 5th | Middle #1 | Army Post Road |
| Yeader #4 | Yeader Creek & Indianola Rd | | |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PROP GLYCOL | ETH GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 01/04/17 | Frink#1 | 24 | 7.8 | 13.2 | 27 | < 14 | | | < 1.0 | < 1.0 | | | | |
| 01/09/17 | Frink#1 | 38 | 7.6 | 11.7 | < 20 | < 16 | | | < 1.0 | < 1.0 | | | | |
| 01/18/17 | Frink#1 | 237 | 7.7 | 10.0 | 128 | 32 | | | < 1.0 | < 1.0 | | | | |
| 01/24/17 | Frink#1 | 107 | 8.0 | 10.4 | 23 | 26 | | | 1.4 | < 1.0 | | | | |
| 01/30/17 | Frink#1 | 69 | 8.0 | 10.1 | 23 | < 10 | | < 5 | < 2.0 | < 2.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **95** | **7.8** | **11.1** | **44.2** | **19.6** | | **5** | **1.3** | **1.2** | **1.0** | **1.0** | **1.0** | **2.0** |
| 01/04/17 | Middle#1 | 14 | 8.1 | 13.9 | 22 | < 14 | | | < 1.0 | < 1.0 | | | | |
| 01/09/17 | Middle#1 | 14 | 7.7 | 11.4 | < 20 | < 16 | | | < 1.0 | < 1.0 | | | | |
| 01/18/17 | Middle#1 | 38 | 7.9 | 10.4 | 55 | 20 | | | < 1.0 | < 1.0 | | | | |
| 01/24/17 | Middle#1 | 24 | 8.2 | 10.8 | < 20 | < 7 | | | < 1.0 | < 1.0 | | | | |
| 01/30/17 | Middle#1 | 18 | 8.1 | 10.9 | 30 | < 10 | | < 5 | < 2.0 | < 2.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **22** | **8.0** | **11.5** | **29.4** | **13.4** | | **5** | **1.2** | **1.2** | **1.0** | **1.0** | **1.0** | **2.0** |
| 01/04/17 | Yeader#1 | 9 | 7.8 | 10.5 | 44 | 31 | < 0.20 | | < 1.0 | < 1.0 | | | | |
| 01/06/17 | Yeader#1 | 9 | | 11.4 | | | | | < 1.0 | < 1.0 | | | | |
| 01/09/17 | Yeader#1 | 9 | 7.8 | 10.1 | 26 | < 16 | < 0.20 | | < 1.0 | < 1.0 | | | | |
| 01/12/17 | Yeader#1 | 5 | | 10.7 | | | | | < 1.0 | < 1.0 | | | | |
| 01/18/17 | Yeader#1 | 14 | 7.7 | 9.2 | 85 | 38 | 0.28 | | < 1.0 | < 1.0 | | | | |
| 01/20/17 | Yeader#1 | 24 | | 8.5 | | | | | < 1.0 | < 1.0 | | | | |
| 01/24/17 | Yeader#1 | 9 | 7.9 | 9.1 | 90 | 67 | < 0.20 | | 18.1 | < 1.0 | | | | |
| 01/27/17 | Yeader#1 | 9 | | 9.6 | | | | | 22.3 | 2.0 | | | | |
| 01/30/17 | Yeader#1 | 24 | 7.7 | 8.4 | 66 | 38 | < 0.20 | < 5 | 9.6 | < 2.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MONTHLY AVERAGE** | | **12** | **7.8** | **9.7** | **62.2** | **38.0** | **0.2** | **5** | **6.2** | **1.2** | **1.0** | **1.0** | **1.0** | **2.0** |
| 01/06/17 | Yeader#2 | | | 10.4 | | | | | < 1.0 | < 1.0 | | | | |
| 01/12/17 | Yeader#2 | | | 11.2 | | | | | < 1.0 | < 1.0 | | | | |
| 01/20/17 | Yeader#2 | | | 9.3 | | | | | < 1.0 | < 1.0 | | | | |
| 01/27/17 | Yeader#2 | | | 10.6 | | | | | < 2.0 | < 2.0 | | | | |
| 01/06/17 | Yeader#3 | | | 12.1 | | | | | < 1.0 | < 1.0 | | | | |
| 01/12/17 | Yeader#3 | | | 11.1 | | | | | < 1.0 | < 1.0 | | | | |
| 01/20/17 | Yeader#3 | | | 9.8 | | | | | < 1.0 | < 1.0 | | | | |
| 01/27/17 | Yeader#3 | | | 11.1 | | | | | < 2.0 | < 2.0 | | | | |
| 01/06/17 | Yeader#4 | | | 9.6 | | | | | < 1.0 | < 1.0 | | | | |
| 01/12/17 | Yeader#4 | | | 11.0 | | | | | < 1.0 | < 1.0 | | | | |
| 01/20/17 | Yeader#4 | | | 9.6 | | | | | < 1.0 | < 1.0 | | | | |
| 01/27/17 | Yeader#4 | | | 11.3 | | | | | < 2.0 | < 2.0 | | | | |
| **MONTHLY AVERAGE** | | | | **10.6** | | | | | **1.3** | **1.3** | | | | |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PROPYLE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 02/06/17 | Frink#1 | 38 | 7.9 | 10.2 | < 20 | < 16 | | | < 2.0 | < 2.0 | | | | |
| 02/16/17 | Frink#1 | 38 | 8.0 | 9.7 | < 20 | < 17 | | | < 1.0 | < 1.0 | | | | |
| 02/21/17 | Frink#1 | 38 | 7.9 | 9.7 | 23 | < 15 | | < 5 | < 2.0 | < 2.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 02/28/17 | Frink#1 | 50 | 8.0 | 9.7 | < 20 | < 17 | | | 19.9 | 9.1 | | | | |
| **MONTHLY AVERAGE** | | **41** | **7.9** | **9.8** | **20.8** | **16.3** | | **5** | **6.2** | **3.5** | **1.0** | **1.0** | **1.0** | **2.0** |
| 02/06/17 | Middle#1 | 9 | 8.1 | 10.5 | < 20 | < 16 | | | < 2.0 | < 2.0 | | | | |
| 02/16/17 | Middle#1 | 14 | 8.2 | 10.4 | 21 | < 17 | | | < 1.0 | < 1.0 | | | | |
| 02/21/17 | Middle#1 | 14 | 8.2 | 11.6 | 31 | < 15 | | < 5 | 7.8 | < 2.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 02/28/17 | Middle#1 | 14 | 8.3 | 11.7 | 57 | < 17 | | | < 2.0 | < 2.0 | | | | |
| **MONTHLY AVERAGE** | | **13** | **8.2** | **11.1** | **32.3** | **16.3** | | **5** | **3.2** | **1.8** | **1.0** | **1.0** | **1.0** | **2.0** |
| 02/03/17 | Yeader#1 | 24 | | 10.8 | | | | | 3.2 | < 2.0 | | | | |
| 02/06/17 | Yeader#1 | 18 | 7.8 | 9.3 | < 20 | < 16 | < 0.20 | | < 2.0 | < 2.0 | | | | |
| 02/10/17 | Yeader#1 | 9 | | 9.3 | | | | | 14.3 | < 1.0 | | | | |
| 02/14/17 | Yeader#1 | 14 | | 9.2 | | | | | 2.3 | < 1.0 | | | | |
| 02/16/17 | Yeader#1 | 18 | 7.8 | 8.3 | 93 | 24 | < 0.20 | | 1.5 | < 1.0 | | | | |
| 02/21/17 | Yeader#1 | 14 | 7.7 | 8.0 | 111 | 62 | < 0.20 | < 5 | < 2.0 | < 2.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 02/23/17 | Yeader#1 | 14 | | 9.1 | | | | | < 2.0 | < 2.0 | | | | |
| 02/28/17 | Yeader#1 | 18 | 7.7 | 8.2 | 78 | 48 | < 0.20 | | 9.8 | 2.6 | | | | |
| **MONTHLY AVERAGE** | | **16** | **7.7** | **9.0** | **75.5** | **37.5** | **0.2** | **5** | **4.6** | **1.7** | **1.0** | **1.0** | **1.0** | **2.0** |
| 02/03/17 | Yeader#2 | | | 11.4 | | | | | < 2.0 | < 2.0 | | | | |
| 02/10/17 | Yeader#2 | | | 9.9 | | | | | < 1.0 | < 1.0 | | | | |
| 02/14/17 | Yeader#2 | | | 10.8 | | | | | < 1.0 | < 1.0 | | | | |
| 02/23/17 | Yeader#2 | | | 13.1 | | | | | < 2.0 | < 2.0 | | | | |
| 02/03/17 | Yeader#3 | | | 13.0 | | | | | < 2.0 | < 2.0 | | | | |
| 02/10/17 | Yeader#3 | | | 11.5 | | | | | < 1.0 | < 1.0 | | | | |
| 02/14/17 | Yeader#3 | | | 12.9 | | | | | < 1.0 | < 1.0 | | | | |
| 02/23/17 | Yeader#3 | | | 12.3 | | | | | < 2.0 | < 2.0 | | | | |
| 02/03/17 | Yeader#4 | | | 12.8 | | | | | < 2.0 | < 2.0 | | | | |
| 02/10/17 | Yeader#4 | | | 11.4 | | | | | < 1.0 | < 1.0 | | | | |
| 02/14/17 | Yeader#4 | | | 11.8 | | | | | < 1.0 | < 1.0 | | | | |
| 02/23/17 | Yeader#4 | | | 10.6 | | | | | < 2.0 | < 2.0 | | | | |
| **MONTHLY AVERAGE** | | | | **11.8** | | | | | **1.5** | **1.5** | | | | |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PROPYLE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 03/07/17 | Frink#1 | 69 | 8.0 | 10.6 | < 20 | < 13 | | < 5 | < 1.0 | 1.9 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 03/15/17 | Frink#1 | 50 | 8.0 | 11.9 | 28 | < 18 | | | < 1.0 | < 1.0 | | | | |
| 03/21/17 | Frink#1 | 125 | 8.0 | 10.5 | < 20 | < 11 | | | < 1.0 | < 1.0 | | | | |
| 03/28/17 | Frink#1 | 69 | 8.1 | 10.4 | < 20 | < 16 | | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **78** | **8.0** | **10.9** | **22.0** | **14.5** | | **5** | **1.0** | **1.2** | **1.0** | **1.0** | **1.0** | **2.0** |
| 03/07/17 | Middle#1 | 14 | 8.2 | 10.8 | 26 | < 13 | | < 5 | < 1.0 | 2.9 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 03/15/17 | Middle#1 | 9 | 8.1 | 13.2 | < 20 | < 18 | | | < 1.0 | < 1.0 | | | | |
| 03/21/17 | Middle#1 | 52 | 7.9 | 11.2 | 47 | < 11 | | | < 1.0 | < 1.0 | | | | |
| 03/28/17 | Middle#1 | 24 | 8.1 | 10.9 | < 20 | < 16 | | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **25** | **8.1** | **11.5** | **28.3** | **14.5** | | **5** | **1.0** | **1.5** | **1.0** | **1.0** | **1.0** | **2.0** |
| 03/03/17 | Yeader#1 | 24 | | 10.4 | | | | | < 1.0 | 4.0 | | | | |
| 03/07/17 | Yeader#1 | 24 | 7.8 | 8.8 | 85 | 44 | < 0.20 | < 5 | 3.2 | 2.3 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 03/08/17 | Yeader#1 | 24 | | 8.7 | | | | | 1.0 | 4.3 | | | | |
| 03/15/17 | Yeader#1 | 14 | 7.8 | 10.3 | 49 | 18 | < 0.20 | | < 1.0 | < 1.0 | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 03/17/17 | Yeader#1 | 18 | | 8.8 | | | | 1.3 | < 1.0 | | | | | |
| 03/21/17 | Yeader#1 | 197 | 7.9 | 10.6 | 43 | < 11 | < 0.20 | < 1.0 | < 1.0 | | | | | |
| 03/24/17 | Yeader#1 | 1220 | | 10.0 | | | | < 1.0 | < 1.0 | | | | | |
| 03/28/17 | Yeader#1 | 24 | 7.6 | 9.5 | 124 | 78 | < 0.20 | 12.0 | < 1.0 | | | | | |
| 03/30/17 | Yeader#1 | 125 | | 10.4 | | | | 6.3 | < 1.0 | | | | | |
| **MONTHLY AVERAGE** | | **186** | **7.8** | **9.7** | **75.3** | **37.8** | **0.20** | **5** | **3.1** | **1.8** | **1.0** | **1.0** | **1.0** | **2.0** |
| 03/03/17 | Yeader#2 | | | 14.4 | | | | < 1.0 | 2.7 | | | | | |
| 03/08/17 | Yeader#2 | | | 10.6 | | | | < 1.0 | 3.7 | | | | | |
| 03/17/17 | Yeader#2 | | | 12.9 | | | | < 1.0 | < 1.0 | | | | | |
| 03/24/17 | Yeader#2 | | | 9.2 | | | | < 1.0 | < 1.0 | | | | | |
| 03/30/17 | Yeader#2 | | | 10.4 | | | | < 1.0 | < 1.0 | | | | | |
| 03/03/17 | Yeader#3 | | | 14.9 | | | | < 1.0 | 2.7 | | | | | |
| 03/08/17 | Yeader#3 | | | 10.9 | | | | < 1.0 | 4.2 | | | | | |
| 03/17/17 | Yeader#3 | | | 12.9 | | | | < 1.0 | < 1.0 | | | | | |
| 03/24/17 | Yeader#3 | | | 9.4 | | | | < 1.0 | < 1.0 | | | | | |
| 03/30/17 | Yeader#3 | | | 10.4 | | | | < 1.0 | < 1.0 | | | | | |
| 03/03/17 | Yeader#4 | | | 13.9 | | | | < 1.0 | 3.5 | | | | | |
| 03/08/17 | Yeader#4 | | | 9.6 | | | | < 1.0 | 4.6 | | | | | |
| 03/17/17 | Yeader#4 | | | 11.8 | | | | < 1.0 | < 1.0 | | | | | |
| 03/24/17 | Yeader#4 | | | 9.2 | | | | < 1.0 | < 1.0 | | | | | |
| 03/30/17 | Yeader#4 | | | 10.4 | | | | < 1.0 | < 1.0 | | | | | |
| **MONTHLY AVERAGE** | | | | **11.4** | | | | **1.0** | **2.0** | | | | | |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PROPYLE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 04/04/17 | Frink#1 | 237 | 7.9 | 10.0 | 33 | < 11 | | < 5 | < 2.0 | < 2.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 04/10/17 | Frink#1 | 107 | 8.1 | 9.9 | < 20 | < 17 | | | < 1.0 | < 1.0 | | | | |
| 04/19/17 | Frink#1 | 149 | 8.2 | 10.0 | < 20 | < 10 | | | < 1.0 | < 1.0 | | | | |
| 04/25/17 | Frink#1 | 52 | 8.1 | 9.4 | < 20 | < 13 | | | < 2.0 | < 2.0 | | | | |
| **MONTHLY AVERAGE** | | **136** | **8.1** | **9.8** | **23.3** | **12.8** | | **5** | **1.5** | **1.5** | **1.0** | **1.0** | **1.0** | **2.0** |
| 04/04/17 | Middle#1 | 69 | 8.0 | 10.7 | 82 | < 11 | | | < 2.0 | < 2.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 04/10/17 | Middle#1 | 38 | 8.2 | 10.3 | < 20 | < 17 | | | < 1.0 | < 1.0 | | | | |
| 04/19/17 | Middle#1 | 50 | 8.2 | 10.5 | < 20 | < 10 | | | < 1.0 | < 1.0 | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 04/25/17 | Middle#1 | 24 | 8.3 | 10.6 | < 20 | < 13 | | | < 2.0 | < 2.0 | | | | |
| 04/28/17 | Middle#1 | | | | | | | < 5 | | | | | | |
| **MONTHLY AVERAGE** | | **45** | **8.2** | **10.5** | **35.5** | **12.8** | | **5** | **1.5** | **1.5** | **1.0** | **1.0** | **1.0** | **2.0** |
| 04/04/17 | Yeader#1 | 38 | 7.6 | 9.8 | 147 | 9 | < 0.20 | < 5 | < 2.0 | < 2.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 04/07/17 | Yeader#1 | 38 | | 9.3 | | | | | < 1.0 | < 1.0 | | | | |
| 04/10/17 | Yeader#1 | 38 | 7.6 | 8.2 | 54 | < 17 | < 0.20 | | < 1.0 | < 1.0 | | | | |
| 04/14/17 | Yeader#1 | 69 | | 8.8 | | | | | < 1.0 | < 1.0 | | | | |
| 04/19/17 | Yeader#1 | 6 | 7.6 | 8.5 | 36 | 14 | 0.32 | | < 1.0 | < 1.0 | | | | |
| 04/21/17 | Yeader#1 | 38 | | 8.6 | | | | | < 2.0 | < 2.0 | | | | |
| 04/25/17 | Yeader#1 | 45 | 7.8 | 8.5 | < 20 | < 13 | 1.26 | | < 2.0 | < 2.0 | | | | |
| 04/28/17 | Yeader#1 | 370 | | 9.5 | | | | | < 2.0 | < 2.0 | | | | |
| **MONTHLY AVERAGE** | | **80** | **7.6** | **8.9** | **64.3** | **13.3** | **0.5** | **5** | **1.5** | **1.5** | **1.0** | **1.0** | **1.0** | **2.0** |
| 04/07/17 | Yeader#2 | | | 10.9 | | | | | < 1.0 | < 1.0 | | | | |
| 04/14/17 | Yeader#2 | | | 11.3 | | | | | < 1.0 | < 1.0 | | | | |
| 04/21/17 | Yeader#2 | | | 13.7 | | | | | < 2.0 | < 2.0 | | | | |
| 04/28/17 | Yeader#2 | | | 9.6 | | | | | < 2.0 | < 2.0 | | | | |
| 04/07/17 | Yeader#3 | | | 10.7 | | | | | < 1.0 | < 1.0 | | | | |
| 04/14/17 | Yeader#3 | | | 9.6 | | | | | < 1.0 | < 1.0 | | | | |
| 04/21/17 | Yeader#3 | | | 11.1 | | | | | < 2.0 | < 2.0 | | | | |
| 04/28/17 | Yeader#3 | | | 10.0 | | | | | < 2.0 | < 2.0 | | | | |
| 04/07/17 | Yeader#4 | | | 10.7 | | | | | < 1.0 | < 1.0 | | | | |
| 04/14/17 | Yeader#4 | | | 9.3 | | | | | < 1.0 | < 1.0 | | | | |
| 04/21/17 | Yeader#4 | | | 10.1 | | | | | < 2.0 | < 2.0 | | | | |
| 04/28/17 | Yeader#4 | | | 9.3 | | | | | < 2.0 | < 2.0 | | | | |
| **MONTHLY AVERAGE** | | | | **10.5** | | | | | **1.5** | **1.5** | | | | |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | TSS | OIL & GREASE | PROPYLE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | ug/L | ug/L | ug/L |
| 05/01/17 | Frink#1 | 700 | 7.9 | 10.2 | 25 | < 16 | 41 | < 5.0 | < 2.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 10.0 |
| 05/15/17 | Frink#1 | 69 | 8.0 | 8.2 | 27 | < 14 | < 3 | | < 1.0 | < 1.0 | | | | |
| 05/26/17 | Frink#1 | 149 | 8.0 | 9.0 | < 20 | 9 | 3 | | < 1.0 | < 1.0 | | | | |
| 05/30/17 | Frink#1 | 107 | 8.1 | 9.0 | 10 | < 17 | 4 | | < 2.0 | < 2.0 | | | | |
| **MONTHLY AVERAGE** | | **256** | **8.0** | **9.1** | **20.5** | **14.0** | **13** | **5** | **1.5** | **1.5** | **5.0** | **5.0** | **5.0** | **10.0** |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 05/01/17 | Middle#1 | 69 | 7.9 | 10.9 | 24 | < 16 | 20 | < 5.0 | < 2.0 | 15.1 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 05/15/17 | Middle#1 | 38 | 8.2 | 8.7 | < 20 | < 14 | < 3 | | < 1.0 | < 1.0 | | | | |
| 05/26/17 | Middle#1 | 107 | 8.0 | 9.4 | 26 | 12 | 29 | | < 1.0 | < 1.0 | | | | |
| 05/30/17 | Middle#1 | 30 | 8.2 | 9.5 | 14 | < 17 | < 3 | | < 2.0 | < 2.0 | | | | |
| **MONTHLY AVERAGE** | | **61** | **8.1** | **9.7** | **21.0** | **14.8** | **14** | **5** | **1.5** | **4.8** | **1.0** | **1.0** | **1.0** | **2.0** |
| 05/01/17 | Yeader#1 | 149 | 8.7 | 9.6 | 50 | < 16 | < 3 | < 5.0 | < 2.0 | 16.3 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 05/08/17 | Yeader#1 | 107 | 7.6 | 7.9 | 42 | < 18 | 5 | | < 2.0 | < 2.0 | | | | |
| 05/11/17 | Yeader#1 | 69 | | 8.3 | | | | | < 1.0 | < 1.0 | | | | |
| 05/15/17 | Yeader#1 | 38 | 7.7 | 7.8 | 23 | < 14 | < 3 | | < 1.0 | < 1.0 | | | | |
| 05/18/17 | Yeader#1 | 24 | | 8.8 | | | | | < 1.0 | < 1.0 | | | | |
| 05/23/17 | Yeader#1 | 45 | | 8.5 | | | | | < 1.0 | < 1.0 | | | | |
| 05/26/17 | Yeader#1 | 69 | 7.5 | 8.5 | 90 | 30 | 60 | | < 1.0 | < 1.0 | | | | |
| 05/30/17 | Yeader#1 | 30 | 7.6 | 7.4 | 35 | 21 | 7 | | < 2.0 | < 2.0 | | | | |
| 05/31/17 | Yeader#1 | 24 | | 7.5 | | | | | < 2.0 | < 2.0 | | | | |
| **MONTHLY AVERAGE** | | **62** | **7.8** | **8.3** | **48.0** | **19.8** | **15.6** | **5.0** | **1.4** | **3.0** | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | TSS | OIL & GREASE | PROPYLE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 06/09/17 | Frink#1 | | | | | | | < 5.0 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **0.0** | | **0.0** | | | | **5.0** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 06/09/17 | Middle#1 | | | | | | | < 5.0 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **0.0** | | **0.0** | | | | **5.0** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 06/09/17 | Yeader#1 | | | | | | | < 5.0 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **0.0** | | **0.0** | | | | **5.0** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PROPYLE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 07/07/17 | Frink#1 | | | | | | | <5.0 | | | <1.0 | <1.0 | <1.0 | <2.0 |
| **MONTHLY AVERAGE** | | **0.0** | | **0.0** | | | | **5.0** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 07/07/17 | Middle#1 | | | | | | | <5.0 | | | <1.0 | <1.0 | <1.0 | <2.0 |
| **MONTHLY AVERAGE** | | **0.0** | | **0.0** | | | | **5.0** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 07/07/17 | Yeader#1 | | | | | | | <5.0 | | | <1.0 | <1.0 | <1.0 | <2.0 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MONTHLY AVERAGE** | | **0.0** | | **0.0** | | | | **5.0** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PROPYLE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 08/10/17 | Frink#1 | | | | | | | <5.0 | | | <1.0 | <1.0 | <1.0 | <2.0 |
| **MONTHLY AVERAGE** | | **0.0** | | **0.0** | | | | **5.0** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 08/10/17 | Middle#1 | | | | | | | <5.0 | | | <1.0 | <1.0 | <1.0 | <2.0 |
| **MONTHLY AVERAGE** | | **0.0** | | **0.0** | | | | **5.0** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 08/10/17 | Yeader#1 | | | | | | | <5.0 | | | <1.0 | <1.0 | <1.0 | <2.0 |
| **MONTHLY AVERAGE** | | **0.0** | | **0.0** | | | | **5.0** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PROPYLE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 09/01/17 | Frink#1 | 24 | | | | | | <5 | | | <1 | <1 | <1 | <2 |
| **MONTHLY AVERAGE** | | **24.0** | | **0.0** | | | | **5.0** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 09/01/17 | Middle#1 | 14 | | | | | | <5 | | | <1 | <1 | <1 | <2 |
| **MONTHLY AVERAGE** | | **14.0** | | **0.0** | | | | **5.0** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 09/01/17 | Yeader#1 | 18 | | | | | | <5 | | | <1 | <1 | <1 | <2 |
| **MONTHLY AVERAGE** | | **18.0** | | **0.0** | | | | **5.0** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | TSS | OIL & GREASE | PROPYLE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | ug/L | ug/L | ug/L |
| 10/03/17 | Frink#1 | 50 | 8.2 | 8.3 | <20 | <14 | <1.2 | <5 | | | | | | |
| 10/06/17 | Frink#1 | 237 | | | | | | | <2.0 | <2.0 | | | | |
| 10/18/17 | Frink#1 | 88 | 8.1 | 8.9 | <20 | <16 | 4 | | | | | | | |
| 10/20/17 | Frink#1 | | | | | | | | <1.0 | <1.0 | | | | |
| 10/30/17 | Frink#1 | 69 | 8.3 | 11.5 | 22 | <11 | 4 | | | | | | | |
| **MONTHLY AVERAGE** | | **111** | **8.2** | **9.6** | **20.7** | **13.7** | **3** | **5** | **1.5** | **1.5** | | | | |
| 10/03/17 | Middle#1 | 14 | 8.4 | 12.5 | <20 | <14 | 5 | <5 | <2.0 | <2.0 | | | | |
| 10/18/17 | Middle#1 | 14 | 8.3 | 10.2 | <20 | <16 | 2 | | <2.0 | <2.0 | | | | |
| 10/30/17 | Middle#1 | 9 | 8.5 | 12.5 | 22 | <11 | 2 | | <1.0 | <1.0 | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MONTHLY AVERAGE** | | **12** | **8.4** | **11.7** | **20.7** | **13.7** | **3** | **5** | **1.7** | **1.7** | | | | |
| 10/03/17 | Yeader#1 | 18 | 7.7 | 8.1 | <20 | <14 | 4 | <5 | <2.0 | <2.0 | | | | |
| 10/04/17 | Yeader#1 | 14 | | 8.6 | | | | | <2.0 | <2.0 | | | | |
| 10/10/17 | Yeader#1 | 149 | 7.8 | 9.2 | <20 | <14 | 7 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 |
| 10/13/17 | Yeader#1 | 18 | | 8.5 | | | | | <2.0 | <2.0 | | | | |
| 10/18/17 | Yeader#1 | 24 | 7.6 | 7.3 | 121 | 84 | 5 | | 41.6 | <2.0 | | | | |
| 10/20/17 | Yeader#1 | 24 | | 7.5 | | | | | <1.0 | <1.0 | | | | |
| 10/23/17 | Yeader#1 | 18 | 7.7 | 8.8 | 23 | <12 | 8 | | 21.6 | <1.0 | | | | |
| 10/25/17 | Yeader#1 | 14 | | 8.3 | | | | | 2 | <1.0 | | | | |
| 10/30/17 | Yeader#1 | 24 | 7.9 | 10.1 | 28 | <11 | 5 | | <1.0 | <1.0 | | | | |
| **MONTHLY AVERAGE** | | **34** | **7.7** | **8.5** | **42.4** | **27.0** | **6** | **5** | **8.2** | **1.4** | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW GPM | pH S.U. | D.O. METER mg/L | COD mg/L | CBOD mg/L | TSS mg/L | OIL & GREASE mg/L | PROPYLE GLYCOL mg/L | ETHYLENE GLYCOL mg/L | BENZENE ug/L | TOLUENE ug/L | ETHYL-BENZENE ug/L | TOTAL XYLENE ug/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/01/17 | Frink#1 | | | | | | | | <1.0 | <1.0 | | | | |
| 11/14/17 | Frink#1 | 38 | 8.4 | 10.5 | <20 | <10 | 1.5 | <5 | <1.0 | 2.6 | <1.0 | <1.0 | <1.0 | <2.0 |
| 11/28/17 | Frink#1 | 38 | 8.4 | 11.4 | <20 | <16 | <1.2 | | <1.0 | <1.0 | | | | |
| **MONTHLY AVERAGE** | | **38** | **8.4** | **11.0** | **20.0** | **13.0** | **1** | **5** | **1.0** | **1.5** | **1.0** | **1.0** | **1.0** | **2.0** |
| 11/14/17 | Middle#1 | 5 | 8.5 | 12.4 | <20 | <10 | <1.2 | <5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| 11/28/17 | Middle#1 | 5 | 8.5 | 12.9 | <20 | <16 | 4 | | <1.0 | <1.0 | | | | |
| **MONTHLY AVERAGE** | | **5** | **8.5** | **12.6** | **20.0** | **13.0** | **3** | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** |
| 11/01/17 | Yeader#1 | 9 | | 9.1 | | | | | <1.0 | <1.0 | | | | |
| 11/06/17 | Yeader#1 | 14 | 7.9 | 9.8 | <20 | <11 | 5 | <5 | 48.8 | <2.0 | <1.0 | <1.0 | <1.0 | <2.0 |
| 11/09/17 | Yeader#1 | 9 | | 9.8 | | | | | <1.0 | <1.0 | | | | |
| 11/14/17 | Yeader#1 | 9 | 8.0 | 9.2 | 23 | <10 | 1.5 | | <1.0 | <1.0 | | | | |
| 11/16/17 | Yeader#1 | 5 | | 9.9 | | | | | <2.0 | <2.0 | | | | |
| 11/20/17 | Yeader#1 | 14 | 7.7 | 9.1 | 42 | <14 | 47 | | <1.0 | <1.0 | | | | |
| 11/22/17 | Yeader#1 | 5 | | 9.9 | | | | | <2.0 | <2.0 | | | | |
| 11/28/17 | Yeader#1 | 5 | 7.8 | 8.9 | <20 | <16 | 3 | | <1.0 | <1.0 | | | | |
| **MONTHLY AVERAGE** | | **9** | **7.9** | **9.5** | **26.3** | **12.8** | **14** | **5** | **7.2** | **1.4** | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | TSS | OIL & GREASE | PROPYLE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | GPM | S.U. | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | ug/L | ug/L | ug/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/13/17 | Frink#1 | 38 | 8.4 | 12.5 | <20 | <14 | 4 | <5 | <2.0 | <2.0 | <1.0 | <1.0 | <1.0 | <2.0 |
| 12/27/17 | Frink#1 | | | | | | | | | | | | | |
| **MONTHLY AVERAGE** | | **38** | **8.4** | **12.5** | **20.0** | **14.0** | **4** | **5** | **2.0** | **2.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 12/13/17 | Middle#1 | 5 | 8.3 | 12.0 | 36 | <14 | 2 | <5 | <2.0 | 4.2 | <1.0 | <1.0 | <1.0 | <2.0 |
| 12/27/17 | Middle#1 | | | | | | | | | | | | | |
| **MONTHLY AVERAGE** | | **5** | **8.3** | **12.0** | **36.0** | **14.0** | **2** | **5** | **2.0** | **4.2** | **1.0** | **1.0** | **1.0** | **2.0** |
| 12/01/17 | Yeader#1 | 5 | | 9.1 | | | | | <1.0 | <1.0 | | | | |
| 12/04/17 | Yeader#1 | 5 | 7.9 | 8.7 | 33 | <17 | 3 | <5 | <2.0 | 2.3 | <5.0 | <5.0 | <5.0 | <10.0 |
| 12/08/17 | Yeader#1 | 9 | | 10.3 | | | | | <2.0 | <2.0 | | | | |
| 12/13/17 | Yeader#1 | 5 | 7.9 | 9.5 | 59 | 17 | 11 | | 3.4 | 2.5 | | | | |
| 12/15/17 | Yeader#1 | 5 | | 10.5 | | | | | <2.0 | <2.0 | | | | |
| 12/19/17 | Yeader#1 | 5 | 7.9 | 9.7 | 22 | <14 | 3 | | <2.0 | 6.1 | | | | |
| 12/22/17 | Yeader#1 | 5 | | 10.7 | | | | | <2.0 | <2.0 | | | | |
| 12/27/17 | Yeader#1 | 5 | 8.4 | 13.1 | 35 | <13 | 4 | | <2.0 | <2.0 | | | | |
| 12/29/17 | Yeader#1 | <5 | | 12.0 | | | | | <2.0 | <2.0 | | | | |
| **MONTHLY AVERAGE** | | **5** | **8.0** | **10.4** | **37.3** | **15.3** | **5** | **5** | **2.0** | **2.4** | **5.0** | **5.0** | **5.0** | **10.0** |

DES MOINES INTERNATIONAL AIRPORT
STORMWATER ANALYSIS REPORTS
2016 SUMMARY

LOCATION KEY

| | | | |
|---|---|---|---|
| Yeader #1 | Yeader Creek & Fleur | Frink #1 | Frink Creek & SW 42nd |
| Yeader #2 | Yeader Creek & SW 9th | Frink #2 | Frink Creek & Park Ave. |
| Yeader #3 | Yeader Creek & SE 5th | Middle #1 | Army Post Road |
| Yeader #4 | Yeader Creek & Indianola Rd | | |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PROP GLYCOL | ETH GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 01/06/16 | Frink#1 | 107 | 7.9 | 11.5 | < 20 | | | | <1.0 | <1.0 | | | | |
| 01/07/16 | Frink#1 | | | | | < 17 | | | | | | | | |
| 01/11/16 | Frink#1 | 107 | 7.7 | 11.4 | < 20 | < 18 | | | <1.0 | <1.0 | | | | |
| 01/20/16 | Frink#1 | 107 | 7.7 | 12.2 | < 20 | < 17 | | | <1.0 | <1.0 | | | | |
| 01/27/16 | Frink#1 | 88 | 8.0 | 12.5 | < 20 | < 16 | | < 5 | | | <1.0 | <1.0 | <1.0 | <2.0 |
| **MONTHLY AVERAGE** | | **102** | **7.8** | **11.9** | **20** | **17** | | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 01/06/16 | Middle#1 | 50 | 8.1 | 11.5 | 27 | | | | <1.0 | <1.0 | | | | |
| 01/07/16 | Middle#1 | | | | | < 17 | | | | | | | | |
| 01/11/16 | Middle#1 | 38 | 8.1 | 11.8 | < 20 | < 18 | | | <1.0 | <1.0 | | | | |
| 01/20/16 | Middle#1 | 50 | 8.0 | 12.5 | < 20 | < 17 | | | <1.0 | <1.0 | | | | |
| 01/27/16 | Middle#1 | 50 | 8.1 | 12.9 | < 20 | < 16 | | < 5 | | | <1.0 | <1.0 | <1.0 | <2.0 |
| **MONTHLY AVERAGE** | | **47** | **8.1** | **12.2** | **22** | **17** | | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 01/06/16 | Yeader#1 | 38 | 7.8 | 10.6 | 32 | | 0.28 | | <1.0 | <1.0 | | | | |
| 01/07/16 | Yeader#1 | | | | | < 17 | | | | | | | | |
| 01/08/16 | Yeader#1 | 237 | | 10.5 | | | | | 8.9 | <1.0 | | | | |
| 01/11/16 | Yeader#1 | 45 | 7.2 | 10.2 | < 20 | <18 | < 0.20 | | <1.0 | <1.0 | | | | |
| 01/14/16 | Yeader#1 | 69 | | 9.7 | | | | | 6.0 | <1.0 | | | | |
| 01/20/16 | Yeader#1 | 38 | 7.6 | 10.6 | 52 | < 17 | 0.42 | | 1.5 | <1.0 | | | | |
| 01/22/16 | Yeader#1 | 38 | | 11.4 | | | | | <1.0 | <1.0 | | | | |
| 01/27/16 | Yeader#1 | 50 | 7.6 | 10.3 | 143 | 22 | 0.82 | < 5 | 7.8 | 3 | <1.0 | <1.0 | <1.0 | <2.0 |
| 01/29/16 | Yeader#1 | 125 | | 9.5 | | | | | 17.8 | <1.0 | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MONTHLY AVERAGE** | | **80** | **7.5** | **10.3** | **62** | **19** | **0.43** | **5** | **5.6** | **1.2** | **1.0** | **1.0** | **1.0** | **2.0** |
| 01/08/16 | Yeader#2 | | | 10.5 | | | | | <1.0 | <1.0 | | | | |
| 01/14/16 | Yeader#2 | | | 10.3 | | | | | <1.0 | <1.0 | | | | |
| 01/22/16 | Yeader#2 | | | 12.7 | | | | | <1.0 | <1.0 | | | | |
| 01/27/16 | Yeader#2 | | | | | | | | <1.0 | <1.0 | | | | |
| 01/29/16 | Yeader#2 | | | 11.1 | | | | | <1.0 | <1.0 | | | | |
| 01/08/16 | Yeader#3 | | | 10.7 | | | | | <1.0 | <1.0 | | | | |
| 01/14/16 | Yeader#3 | | | 11.0 | | | | | <1.0 | <1.0 | | | | |
| 01/22/16 | Yeader#3 | | | 12.4 | | | | | <1.0 | <1.0 | | | | |
| 01/29/16 | Yeader#3 | | | 11.5 | | | | | <1.0 | <1.0 | | | | |
| 01/27/16 | Yeader#3 | | | | | | | | <1.0 | <1.0 | | | | |
| 01/08/16 | Yeader#4 | | | 10.5 | | | | | <1.0 | <1.0 | | | | |
| 01/14/16 | Yeader#4 | | | 9.2 | | | | | <1.0 | <1.0 | | | | |
| 01/22/16 | Yeader#4 | | | 13.1 | | | | | <1.0 | <1.0 | | | | |
| 01/27/16 | Yeader#4 | | | | | | | | <1.0 | <1.0 | | | | |
| 01/29/16 | Yeader#4 | | | 12.0 | | | | | <1.0 | <1.0 | | | | |
| **MONTHLY AVERAGE** | | | | **11.3** | | | | | **1.0** | **1.0** | | | | |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 02/04/16 | Frink#1 | 88 | 7.8 | 12.1 | < 20 | < 16 | | | <1.0 | <1.0 | | | | |
| 02/11/16 | Frink#1 | 52 | 7.8 | 12.6 | < 20 | < 17 | | | <1.0 | <1.0 | | | | |
| 02/17/16 | Frink#1 | 197 | 7.8 | 11.8 | 82 | 20 | | < 5 | 16.3 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 |
| 02/23/16 | Frink#1 | 125 | 8.0 | 11.8 | < 20 | < 18 | | | <1.0 | <1.0 | | | | |
| **MONTHLY AVERAGE** | | **116** | **7.9** | **12.1** | **35.5** | **17.8** | | **5** | **4.8** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 02/04/16 | Middle#1 | 50 | 8.1 | 12.9 | 24 | < 16 | | | <1.0 | <1.0 | | | | |
| 02/11/16 | Middle#1 | 50 | 8.1 | 12.9 | < 20 | < 17 | | | <1.0 | <1.0 | | | | |
| 02/17/16 | Middle#1 | 125 | 7.8 | 12.0 | 33 | < 17 | | < 5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 |
| 02/26/16 | Middle#1 | 50 | 8.1 | 11.2 | < 20 | < 18 | | | <1.0 | <1.0 | | | | |
| **MONTHLY AVERAGE** | | **69** | **8.0** | **12.3** | **24.3** | **17.0** | | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 02/01/16 | Yeader#1 | 38 | | 8.9 | | | | | 21.4 | <1.0 | | | | |
| 02/04/16 | Yeader#1 | 38 | 7.5 | 9.9 | 122 | 48 | < 0.20 | | 28.4 | <1.0 | | | | |
| 02/09/16 | Yeader#1 | 38 | | 10.8 | | | | | 11.8 | <1.0 | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 02/11/16 | Yeader#1 | 30 | 7.7 | 11.8 | < 20 | < 17 | 0.33 | | 1.4 | <1.0 | | | | |
| 02/17/16 | Yeader#1 | 197 | 7.5 | 11.3 | 176 | 110 | < 0.20 | < 5 | 78.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 |
| 02/19/16 | Yeader#1 | 125 | | 9.7 | | | | | 45.1 | <1.0 | | | | |
| 02/23/16 | Yeader#1 | 88 | 7.6 | 9.4 | 110 | 78 | < 0.20 | | 33.7 | <1.0 | | | | |
| 02/26/16 | Yeader#1 | 38 | | 9.7 | | | | | 13.8 | <1.0 | | | | |
| **MONTHLY AVERAGE** | | **74** | **7.6** | **10.2** | **107.0** | **63.3** | | **5** | **29.2** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 02/01/16 | Yeader#2 | | | 11.9 | | | | | <1.0 | <1.0 | | | | |
| 02/09/16 | Yeader#2 | | | 14.8 | | | | | <1.0 | <1.0 | | | | |
| 02/19/16 | Yeader#2 | | | 10.1 | | | | | 1.4 | <1.0 | | | | |
| 02/26/16 | Yeader#2 | | | 13.4 | | | | | <1.0 | <1.0 | | | | |
| 02/01/16 | Yeader#3 | | | 12.4 | | | | | <1.0 | <1.0 | | | | |
| 02/09/16 | Yeader#3 | | | 15.2 | | | | | <1.0 | <1.0 | | | | |
| 02/19/16 | Yeader#3 | | | 10.3 | | | | | <1.0 | <1.0 | | | | |
| 02/26/16 | Yeader#3 | | | 13.8 | | | | | <1.0 | <1.0 | | | | |
| 02/01/16 | Yeader#4 | | | 12.4 | | | | | <1.0 | <1.0 | | | | |
| 02/09/16 | Yeader#4 | | | 17.2 | | | | | <1.0 | <1.0 | | | | |
| 02/19/16 | Yeader#4 | | | 9.1 | | | | | <1.0 | <1.0 | | | | |
| 02/26/16 | Yeader#4 | | | 11.3 | | | | | <1.0 | <1.0 | | | | |
| **MONTHLY AVERAGE** | | | | **12.7** | | | | | **1.0** | **1.0** | | | | |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 03/02/16 | Frink#1 | 69 | 8.1 | 12.5 | < 20 | < 17 | | < 5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 |
| 03/08/16 | Frink#1 | 50 | 8.2 | 10.8 | < 20 | < 17 | | | <1.0 | <1.0 | | | | |
| 03/14/16 | Frink#1 | 107 | 8.2 | 9.6 | 59 | < 18 | | | <1.0 | <1.0 | | | | |
| 03/21/16 | Frink#1 | 125 | 8.0 | 10.1 | < 20 | < 16 | | | <1.0 | <1.0 | | | | |
| 03/31/16 | Frink#1 | 149 | 8.4 | 11.6 | < 20 | < 18 | | | <1.0 | <1.0 | | | | |
| **MONTHLY AVERAGE** | | **100** | **8.2** | **10.9** | **27.8** | **17.2** | | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 03/02/16 | Middle#1 | 38 | 8.2 | 12.7 | < 20 | < 17 | | < 5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 |
| 03/08/16 | Middle#1 | 38 | 8.6 | 12.4 | 40 | < 17 | | | <1.0 | <1.0 | | | | |
| 03/14/16 | Middle#1 | 38 | 8.2 | 10.6 | < 20 | < 18 | | | <1.0 | <1.0 | | | | |
| 03/21/16 | Middle#1 | 69 | 8.1 | 10.5 | < 20 | < 16 | | | <1.0 | <1.0 | | | | |
| 03/31/16 | Middle#1 | 38 | 8.3 | 11.8 | < 20 | < 18 | | | <1.0 | <1.0 | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MONTHLY AVERAGE** | | **44** | **8.3** | **11.6** | **24.0** | **17.2** | | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 03/02/16 | Yeader#1 | 24 | 8.3 | 10.4 | 43 | 21 | < 0.20 | < 5 | 18.5 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 |
| 03/04/16 | Yeader#1 | 38 | | 10.1 | | | | | <1.0 | <1.0 | | | | |
| 03/08/16 | Yeader#1 | 24 | 7.9 | 9.5 | 36 | < 17 | < 0.20 | | <1.0 | <1.0 | | | | |
| 03/11/16 | Yeader#1 | 24 | | 9.7 | | | | | 1.8 | <1.0 | | | | |
| 03/14/16 | Yeader#1 | 18 | 7.7 | 8.4 | 124 | 89 | < 0.20 | | 37.4 | <1.0 | | | | |
| 03/18/16 | Yeader#1 | 69 | | 9.4 | | | | | 17.9 | <1.0 | | | | |
| 03/21/16 | Yeader#1 | 50 | 7.6 | 8.8 | 53 | 46 | < 0.20 | | 10.4 | <1.0 | | | | |
| 03/23/16 | Yeader#1 | 50 | | 9.3 | | | | | 8.1 | <1.0 | | | | |
| 03/31/16 | Yeader#1 | 38 | 7.8 | 9.4 | 56 | 32 | < 0.20 | | 4.3 | <1.0 | | | | |
| **MONTHLY AVERAGE** | | **37** | **7.9** | **9.4** | **62.4** | **41.0** | **0.20** | **5** | **11.2** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 03/04/16 | Yeader#2 | | | 14.9 | | | | | <1.0 | <1.0 | | | | |
| 03/11/16 | Yeader#2 | | | 13.1 | | | | | <1.0 | <1.0 | | | | |
| 03/18/16 | Yeader#2 | | | 10.4 | | | | | <1.0 | <1.0 | | | | |
| 03/23/16 | Yeader#2 | | | 10.1 | | | | | <1.0 | <1.0 | | | | |
| 03/04/16 | Yeader#3 | | | 16.5 | | | | | <1.0 | <1.0 | | | | |
| 03/11/16 | Yeader#3 | | | 13.1 | | | | | <1.0 | <1.0 | | | | |
| 03/18/16 | Yeader#3 | | | 10.4 | | | | | <1.0 | <1.0 | | | | |
| 03/23/16 | Yeader#3 | | | 10.9 | | | | | <1.0 | <1.0 | | | | |
| 03/04/16 | Yeader#4 | | | 12.8 | | | | | <1.0 | <1.0 | | | | |
| 03/11/16 | Yeader#4 | | | 10.7 | | | | | <1.0 | <1.0 | | | | |
| 03/18/16 | Yeader#4 | | | 9.7 | | | | | <1.0 | <1.0 | | | | |
| 03/23/16 | Yeader#4 | | | 9.7 | | | | | <1.0 | <1.0 | | | | |
| **MONTHLY AVERAGE** | | | | **11.9** | | | | | **1.0** | **1.0** | | | | |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 04/06/16 | Frink#1 | 200 | 8.1 | 9.8 | < 20 | < 18 | | | <1.0 | <1.0 | | | | |
| 04/13/16 | Frink#1 | 107 | 8.4 | 11.4 | < 20 | < 17 | | < 5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 |
| 04/19/16 | Frink#1 | 149 | 8.2 | 9.7 | < 20 | < 17 | | | <1.0 | <1.0 | | | | |
| 04/29/16 | Frink#1 | 88 | 8.0 | 10.3 | < 20 | < 16 | | | <1.0 | <1.0 | | | | |
| **MONTHLY AVERAGE** | | **136** | **8.2** | **10.3** | **20.0** | **17.0** | | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 04/06/16 | Middle#1 | 38 | 8.2 | 11.2 | 23 | < 18 | | | <1.0 | <1.0 | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 04/13/16 | Middle#1 | 38 | 8.5 | 12.7 | < 20 | < 17 | | < 5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 |
| 04/19/16 | Middle#1 | 38 | 8.4 | 12.2 | < 20 | < 17 | | | <1.0 | <1.0 | | | | |
| 04/29/16 | Middle#1 | 38 | 8.1 | 10.5 | < 20 | < 16 | | | <1.0 | <1.0 | | | | |
| **MONTHLY AVERAGE** | | **38** | **8.3** | **11.7** | **20.8** | **17.0** | | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 04/01/16 | Yeader#1 | 52 | | 9.9 | | | | | 7.3 | <1.0 | | | | |
| 04/06/16 | Yeader#1 | 88 | 7.9 | 9.1 | 99 | 66 | < 0.20 | | 4.9 | <1.0 | | | | |
| 04/08/16 | Yeader#1 | 38 | | 9.4 | | | | | 11.6 | <1.0 | | | | |
| 04/13/16 | Yeader#1 | 24 | 7.8 | 9.0 | 36 | 24 | 0.41 | < 5 | 1.1 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 |
| 04/15/16 | Yeader#1 | 30 | | 8.7 | | | | | <1.0 | <1.0 | | | | |
| 04/19/16 | Yeader#1 | 24 | 7.8 | 9.1 | 62 | 44 | < 0.20 | | <1.0 | 1.6 | | | | |
| 04/22/16 | Yeader#1 | 38 | | 8.6 | | | | | 61.1 | 87.2 | | | | |
| 04/27/16 | Yeader#1 | 88 | | 8.6 | | | | | <1.0 | <1.0 | | | | |
| 04/29/16 | Yeader#1 | 38 | 7.8 | 8.8 | 45 | 40 | < 0.20 | | 1.5 | <1.0 | | | | |
| **MONTHLY AVERAGE** | | **47** | **7.8** | **9.0** | **60.5** | **43.5** | **0.3** | **5** | **10.1** | **10.6** | **1.0** | **1.0** | **1.0** | **2.0** |
| 04/01/16 | Yeader#2 | | | 9.7 | | | | | <1.0 | <1.0 | | | | |
| 04/08/16 | Yeader#2 | | | 9.3 | | | | | <1.0 | <1.0 | | | | |
| 04/15/16 | Yeader#2 | | | 8.8 | | | | | <1.0 | <1.0 | | | | |
| 04/22/16 | Yeader#2 | | | 9.1 | | | | | <1.0 | 3.5 | | | | |
| 04/27/16 | Yeader#2 | | | 7.9 | | | | | <1.0 | <1.0 | | | | |
| 04/01/16 | Yeader#3 | | | 9.7 | | | | | <1.0 | <1.0 | | | | |
| 04/08/16 | Yeader#3 | | | 10.5 | | | | | <1.0 | <1.0 | | | | |
| 04/15/16 | Yeader#3 | | | 8.9 | | | | | <1.0 | <1.0 | | | | |
| 04/22/16 | Yeader#3 | | | 10.6 | | | | | <1.0 | <1.0 | | | | |
| 04/27/16 | Yeader#3 | | | 8.7 | | | | | <1.0 | <1.0 | | | | |
| 04/01/16 | Yeader#4 | | | 8.9 | | | | | <1.0 | <1.0 | | | | |
| 04/08/16 | Yeader#4 | | | 10.0 | | | | | <1.0 | <1.0 | | | | |
| 04/15/16 | Yeader#4 | | | 9.1 | | | | | <1.0 | <1.0 | | | | |
| 04/22/16 | Yeader#4 | | | 10.6 | | | | | <1.0 | <1.0 | | | | |
| 04/27/16 | Yeader#4 | | | 8.2 | | | | | <1.0 | <1.0 | | | | |
| **MONTHLY AVERAGE** | | | | **9.3** | | | | | **1.0** | **1.2** | | | | |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PYLENE GLYCOL | THYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 05/03/16 | Frink#1 | 88 | 7.8 | 9.1 | < 20 | < 16 | | < 5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 |
| 05/13/16 | Frink#1 | 69 | 8.1 | 9.8 | < 20 | < 12 | | | <1.0 | <1.0 | | | | |
| 05/18/16 | Frink#1 | 69 | 8.0 | 8.9 | < 20 | < 20 | | | <1.0 | <1.0 | | | | |
| 05/25/16 | Frink#1 | 69 | 8.0 | 8.0 | < 20 | < 17 | | | <1.0 | <1.0 | | | | |
| **MONTHLY AVERAGE** | | **74** | **8.0** | **8.9** | **20.0** | **16.3** | | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 05/03/16 | Middle#1 | 50 | 8.0 | 9.6 | < 20 | < 16 | | < 5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 |
| 05/13/16 | Middle#1 | 38 | 8.1 | 10.1 | < 20 | < 12 | | | <1.0 | <1.0 | | | | |
| 05/18/16 | Middle#1 | 50 | 8.1 | 9.2 | < 20 | < 20 | | | <1.0 | <1.0 | | | | |
| 05/25/16 | Middle#1 | 38 | 8.0 | 9.0 | < 20 | < 17 | | | <1.0 | <1.0 | | | | |
| **MONTHLY AVERAGE** | | **44** | **8.0** | **9.5** | **20.0** | **16.3** | | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 05/03/16 | Yeader#1 | 38 | 7.6 | 8.3 | 43 | 26 | < 0.20 | < 5 | 1.4 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 |
| 05/06/16 | Yeader#1 | 24 | | 7.6 | | | | | <1.0 | <1.0 | | | | |
| 05/11/16 | Yeader#1 | 38 | | 8.5 | | | | | <1.0 | <1.0 | | | | |
| 05/13/16 | Yeader#1 | 48 | 7.7 | 8.5 | < 20 | < 12 | 0.45 | | <1.0 | <1.0 | | | | |
| 05/18/16 | Yeader#1 | 24 | 7.7 | 7.9 | 24 | < 20 | 0.30 | | <1.0 | <1.0 | | | | |
| 05/20/16 | Yeader#1 | 30 | | 7.9 | | | | | <1.0 | <1.0 | | | | |
| 05/25/16 | Yeader#1 | 38 | 7.6 | 7.6 | 16 | 31 | < 0.20 | | <1.0 | <1.0 | | | | |
| 05/27/16 | Yeader#1 | 149 | | 8.3 | | | | | <1.0 | <1.0 | | | | |
| **MONTHLY AVERAGE** | | **49** | **7.7** | **8.1** | **25.8** | **22.3** | **0.3** | **5** | **1.1** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 05/06/16 | Yeader#2 | | | 8.3 | | | | | <1.0 | <1.0 | | | | |
| 05/11/16 | Yeader#2 | | | 7.4 | | | | | <1.0 | <1.0 | | | | |
| 05/20/16 | Yeader#2 | | | 8.7 | | | | | <1.0 | <1.0 | | | | |
| 05/27/16 | Yeader#2 | | | 6.8 | | | | | <1.0 | <1.0 | | | | |
| 05/06/16 | Yeader#3 | | | 8.5 | | | | | <1.0 | <1.0 | | | | |
| 05/11/16 | Yeader#3 | | | 7.8 | | | | | <1.0 | <1.0 | | | | |
| 05/20/16 | Yeader#3 | | | 9.4 | | | | | <1.0 | <1.0 | | | | |
| 05/27/16 | Yeader#3 | | | 7.8 | | | | | <1.0 | <1.0 | | | | |
| 05/06/16 | Yeader#4 | | | 7.6 | | | | | <1.0 | <1.0 | | | | |
| 05/11/16 | Yeader#4 | | | 5.3 | | | | | <1.0 | <1.0 | | | | |
| 05/20/16 | Yeader#4 | | | 17.1 | | | | | <1.0 | <1.0 | | | | |
| 05/27/16 | Yeader#4 | | | 5.1 | | | | | <1.0 | <1.0 | | | | |
| **MONTHLY AVERAGE** | | | | **8.3** | | | | | **1.0** | **1.0** | | | | |

D.O. OIL & )PYLENE THYLENE ETHYL- TOTAL

| DATE | LOCATION | FLOW | pH | METER | COD | CBOD | NH3-N | GREASE | GLYCOL | GLYCOL | BENZENE | TOLUENE | BENZENE | XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| | Frink#1 | | | | | | | | | | | | | |
| **MONTHLY AVERAGE** | | 0.0 | | 0.0 | | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | Middle#1 | | | | | | | | | | | | | |
| **MONTHLY AVERAGE** | | 0.0 | | 0.0 | | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | Yeader#1 | | | | | | | | | | | | | |
| **MONTHLY AVERAGE** | | 0.0 | | 0.0 | | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

*June samples were missed being collected due to a sampling schedule oversight.

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 07/01/16 | Frink#1 | 69 | | 8.9 | | | | <5 | | | <1.0 | <1.0 | <1.0 | <2.0 |
| **MONTHLY AVERAGE** | | 69.0 | | 8.9 | | | | 5.0 | 0.0 | 0.0 | 1.0 | 1.0 | 1.0 | 2.0 |
| 07/01/16 | Middle#1 | 9 | | 10.2 | | | | <5 | | | <1.0 | <1.0 | <1.0 | <2.0 |
| **MONTHLY AVERAGE** | | 8.6 | | 10.2 | | | | 5.0 | 0.0 | 0.0 | 1.0 | 1.0 | 1.0 | 2.0 |
| 07/01/16 | Yeader#1 | 24 | | 7.2 | | | | <5 | | | <1.0 | <1.0 | <1.0 | <2.0 |
| **MONTHLY AVERAGE** | | 24.0 | | 7.2 | | | | 5.0 | 0.0 | 0.0 | 1.0 | 1.0 | 1.0 | 2.0 |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 08/26/16 | Frink#1 | 125 | | 9.0 | | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **125** | | **9.0** | | | | **5** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 08/26/16 | Middle#1 | 24 | | 9.4 | | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **24** | | **9.4** | | | | **5** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 08/26/16 | Yeader#1 | 24 | | 8.6 | | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **24** | | **8.6** | | | | **5** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 09/16/16 | Frink#1 | 4484 | | 8.1 | | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **4484** | | **8.1** | | | | **5.0** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 09/16/16 | Middle#1 | 237 | | 8.7 | | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **237** | | **8.7** | | | | **5.0** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 09/16/16 | Yeader#1 | 300 | | 8.6 | | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **300** | | **8.6** | | | | **5.0** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW GPM | pH S.U. | D.O. METER mg/l | COD mg/l | CBOD mg/l | NH3-N mg/l | OIL & GREASE mg/l | )PYLENE GLYCOL mg/l | THYLENE GLYCOL mg/l | BENZENE ug/l | TOLUENE ug/l | ETHYL-BENZENE ug/l | TOTAL XYLENE ug/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10/04/16 | Frink#1 | 69 | 8.1 | 9.0 | 22 | < 13 | | | < 1.0 | < 1.0 | | | | |
| 10/14/16 | Frink#1 | 88 | 8.1 | 10.1 | 68 | < 16 | | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 10/19/16 | Frink#1 | 69 | 8.1 | 9.4 | < 20 | < 16 | | | < 1.0 | < 1.0 | | | | |
| 10/28/16 | Frink#1 | 50 | 8.1 | 9.4 | < 20 | < 12 | | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **69** | **8.1** | **9.5** | **32.5** | **14.3** | | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 10/04/16 | Middle#1 | 24 | 8.4 | 11.7 | 21 | < 13 | | | < 1.0 | < 1.0 | | | | |
| 10/14/16 | Middle#1 | 24 | 8.3 | 10.8 | < 20 | < 16 | | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 10/19/16 | Middle#1 | 24 | 8.4 | 11.7 | < 20 | < 16 | | | < 1.0 | < 1.0 | | | | |
| 10/28/16 | Middle#1 | 30 | 8.3 | 11.0 | < 20 | < 12 | | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **26** | **8.4** | **11.3** | **20.3** | **14.3** | | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 10/04/16 | Yeader#1 | 18 | 7.7 | 7.7 | 20 | < 13 | 0.22 | | < 1.0 | < 1.0 | | | | |
| 10/07/16 | Yeader#1 | 30 | | 8.7 | | | | | < 1.0 | 4.1 | | | | |
| 10/11/16 | Yeader#1 | 24 | | 7.8 | | | | | < 1.0 | < 1.0 | | | | |
| 10/14/16 | Yeader#1 | 14 | 7.8 | 9.0 | < 20 | < 16 | 0.24 | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 10/19/16 | Yeader#1 | 14 | 7.7 | 7.7 | 20 | < 16 | 0.21 | | < 1.0 | < 1.0 | | | | |
| 10/21/16 | Yeader#1 | 9 | | 8.3 | | | | | < 1.0 | < 1.0 | | | | |
| 10/26/16 | Yeader#1 | 14 | | 8.3 | | | | | < 1.0 | < 1.0 | | | | |
| 10/28/16 | Yeader#1 | 9 | 7.8 | 8.1 | < 20 | < 12 | 0.23 | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **16** | **7.8** | **8.2** | **20.0** | **14.3** | **0.23** | **5** | **1.0** | **1.4** | **1.0** | **1.0** | **1.0** | **2.0** |
| 10/07/16 | Yeader#2 | | | 7.9 | | | | | < 1.0 | 4.1 | | | | |
| 10/11/16 | Yeader#2 | | | 8.5 | | | | | < 1.0 | < 1.0 | | | | |
| 10/21/16 | Yeader#2 | | | 7.9 | | | | | < 1.0 | < 1.0 | | | | |
| 10/26/16 | Yeader#2 | | | 5.2 | | | | | < 1.0 | < 1.0 | | | | |
| 10/07/16 | Yeader#3 | | | 8.5 | | | | | < 1.0 | 4.1 | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10/11/16 | Yeader#3 | | | 8.1 | | | | | < 1.0 | < 1.0 | | | | |
| 10/21/16 | Yeader#3 | | | 7.5 | | | | | < 1.0 | < 1.0 | | | | |
| 10/26/16 | Yeader#3 | | | 5.4 | | | | | < 1.0 | < 1.0 | | | | |
| 10/07/16 | Yeader#4 | | | 7.7 | | | | | < 1.0 | < 1.0 | | | | |
| 10/11/16 | Yeader#4 | | | 6.8 | | | | | < 1.0 | < 1.0 | | | | |
| 10/21/16 | Yeader#4 | | | 6.5 | | | | | < 1.0 | < 1.0 | | | | |
| 10/26/16 | Yeader#4 | | | 7.9 | | | | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | | | **7.3** | | | | | **1.0** | **1.5** | | | | |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 11/01/16 | Frink#1 | 50 | 8.1 | 10.6 | < 20 | < 16 | | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 11/07/16 | Frink#1 | 50 | 8.3 | 11.3 | < 20 | < 18 | | | < 1.0 | < 1.0 | | | | |
| 11/15/16 | Frink#1 | 45 | 8.3 | 10.8 | < 20 | < 17 | | | < 1.0 | < 1.0 | | | | |
| 11/21/16 | Frink#1 | 52 | 8.2 | 12.7 | < 20 | < 18 | | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **49** | **8.2** | **11.4** | **20.0** | **17.3** | | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 11/01/16 | Middle#1 | 30 | 8.4 | 14.0 | 21 | < 16 | | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 11/07/16 | Middle#1 | 38 | 8.4 | 11.8 | 21 | < 18 | | | < 1.0 | < 1.0 | | | | |
| 11/15/16 | Middle#1 | 9 | 8.5 | 12.8 | < 20 | < 17 | | | < 1.0 | < 1.0 | | | | |
| 11/21/16 | Middle#1 | 38 | 8.5 | 13.9 | < 20 | < 18 | | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **29** | **8.4** | **13.1** | **20.5** | **17.3** | | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 11/01/16 | Yeader#1 | 14 | 7.7 | 7.2 | 20 | < 16 | 0.3 | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 11/03/16 | Yeader#1 | 18 | | 7.7 | | | | | < 1.0 | < 1.0 | | | | |
| 11/07/16 | Yeader#1 | 14 | 7.8 | 8.3 | 28 | < 18 | 0.2 | | < 1.0 | < 1.0 | | | | |
| 11/09/16 | Yeader#1 | 14 | | 8.3 | | | | | < 1.0 | < 1.0 | | | | |
| 11/15/16 | Yeader#1 | 24 | 7.8 | 8.0 | 21 | < 17 | 0.3 | | < 1.0 | < 1.0 | | | | |
| 11/17/16 | Yeader#1 | 9 | | 7.4 | | | | | < 1.0 | < 1.0 | | | | |
| 11/21/16 | Yeader#1 | 9 | 7.8 | 8.6 | 21 | < 18 | < 0.2 | | < 1.0 | < 1.0 | | | | |
| 11/23/16 | Yeader#1 | 18 | | 9.4 | | | | | < 1.0 | < 1.0 | | | | |
| 11/30/16 | Yeader#1 | 9 | | 10.0 | | | | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **14** | **7.8** | **8.3** | **22.5** | **17.3** | **0.3** | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 11/03/16 | Yeader#2 | | | 6.0 | | | | | < 1.0 | < 1.0 | | | | |
| 11/09/16 | Yeader#2 | | | 7.7 | | | | | < 1.0 | < 1.0 | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/17/16 | Yeader#2 | | | 8.1 | | | | | < 1.0 | < 1.0 | | | | |
| 11/23/16 | Yeader#2 | | | 9.2 | | | | | < 1.0 | < 1.0 | | | | |
| 11/30/16 | Yeader#2 | | | 10.2 | | | | | < 1.0 | < 1.0 | | | | |
| 11/03/16 | Yeader#3 | | | 4.5 | | | | | < 1.0 | < 1.0 | | | | |
| 11/09/16 | Yeader#3 | | | 5.7 | | | | | < 1.0 | < 1.0 | | | | |
| 11/17/16 | Yeader#3 | | | 7.3 | | | | | < 1.0 | < 1.0 | | | | |
| 11/23/16 | Yeader#3 | | | 9.5 | | | | | < 1.0 | < 1.0 | | | | |
| 11/30/16 | Yeader#3 | | | 10.1 | | | | | < 1.0 | < 1.0 | | | | |
| 11/03/16 | Yeader#4 | | | 2.5 | | | | | < 1.0 | < 1.0 | | | | |
| 11/09/16 | Yeader#4 | | | 4.3 | | | | | < 1.0 | < 1.0 | | | | |
| 11/17/16 | Yeader#4 | | | 6.9 | | | | | < 1.0 | < 1.0 | | | | |
| 11/23/16 | Yeader#4 | | | 8.5 | | | | | < 1.0 | < 1.0 | | | | |
| 11/30/16 | Yeader#4 | | | 6.9 | | | | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | | | **7.2** | | | | | **1.0** | **1.0** | | | | |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PYLENE GLYCOL | THYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 12/02/16 | Frink#1 | 38 | 8.2 | 11.2 | < 20 | < 15 | | | < 1.0 | < 1.0 | | | | |
| 12/07/16 | Frink#1 | 38 | 8.2 | 12.8 | 249 | 143 | | | 117 | < 1.0 | | | | |
| 12/15/16 | Frink#1 | 24 | 7.6 | 14.1 | 31 | < 16 | | | < 1.0 | < 1.0 | | | | |
| 12/20/16 | Frink#1 | 24 | 7.7 | 12.0 | < 20 | < 17 | | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 12/28/16 | Frink#1 | 88 | 7.9 | 10.3 | 143 | < 104 | | | 70.9 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **42** | **7.9** | **12.1** | **92.6** | **59.0** | | **5** | **38.2** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 12/02/16 | Middle#1 | 14 | 8.3 | 12.2 | < 20 | < 15 | | | < 1.0 | < 1.0 | | | | |
| 12/07/16 | Middle#1 | 24 | 8.3 | 13.1 | < 20 | < 14 | | | < 1.0 | < 1.0 | | | | |
| 12/15/16 | Middle#1 | 0 | 7.8 | 14.1 | 31 | < 16 | | | < 1.0 | < 1.0 | | | | |
| 12/20/16 | Middle#1 | 5 | 7.6 | 11.6 | < 20 | < 17 | | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 12/28/16 | Middle#1 | 18 | 8.8 | 11.0 | < 20 | < 16 | | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **12** | **8.2** | **12.4** | **22.2** | **15.6** | | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 12/02/16 | Yeader#1 | 9 | 7.7 | 10.0 | < 20 | < 15 | 0.30 | | < 1.0 | < 1.0 | | | | |
| 12/07/16 | Yeader#1 | 9 | 7.8 | 9.2 | < 20 | < 14 | < 0.2 | | < 1.0 | < 1.0 | | | | |
| 12/09/16 | Yeader#1 | 5 | | 10.4 | | | | | < 1.0 | < 1.0 | | | | |
| 12/12/16 | Yeader#1 | 9 | | 10.9 | | | | | < 1.0 | < 1.0 | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/15/16 | Yeader#1 | 5 | 7.8 | 11.1 | 34 | < 16 | < 0.2 | | < 1.0 | < 1.0 | | | | |
| 12/20/16 | Yeader#1 | 9 | 7.9 | 10.1 | 41 | < 17 | 0.26 | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 12/22/16 | Yeader#1 | 5 | | 9.6 | | | | | 1.8 | < 1.0 | | | | |
| 12/28/16 | Yeader#1 | 18 | 7.7 | 8.7 | 75 | 54 | < 0.2 | | 12.1 | 1.0 | | | | |
| 12/30/16 | Yeader#1 | 24 | | 9.5 | | | | | 3.8 | 1.6 | | | | |
| **MONTHLY AVERAGE** | | **10** | **7.8** | **9.9** | **38.0** | **23.2** | **0.2** | **5** | **2.6** | **1.1** | **1.0** | **1.0** | **1.0** | **2.0** |
| 12/09/16 | Yeader#2 | | | 10.9 | | | | | < 1.0 | < 1.0 | | | | |
| 12/12/16 | Yeader#2 | | | 10.6 | | | | | < 1.0 | < 1.0 | | | | |
| 12/22/16 | Yeader#2 | | | 9.5 | | | | | < 1.0 | < 1.0 | | | | |
| 12/30/16 | Yeader#2 | | | 9.9 | | | | | < 1.0 | < 1.0 | | | | |
| 12/09/16 | Yeader#3 | | | 12.4 | | | | | < 1.0 | < 1.0 | | | | |
| 12/12/16 | Yeader#3 | | | 11.2 | | | | | < 1.0 | < 1.0 | | | | |
| 12/22/19 | Yeader#3 | | | 10.6 | | | | | < 1.0 | < 1.0 | | | | |
| 12/30/16 | Yeader#3 | | | 10.3 | | | | | < 1.0 | < 1.0 | | | | |
| 12/09/16 | Yeader#4 | | | 11.6 | | | | | < 1.0 | < 1.0 | | | | |
| 12/12/16 | Yeader#4 | | | 11.3 | | | | | < 1.0 | < 1.0 | | | | |
| 12/22/16 | Yeader#4 * | | | | | | | | | | | | | |
| 12/30/16 | Yeader#4 | | | 10.2 | | | | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | | | **10.8** | | | | | **1.0** | **1.0** | | | | |

* Yeader 4 12/22/16 no sample collected due to extensive covering of layers of ice. It was not safe to attempt to collect a sample

DES MOINES INTERNATIONAL AIRPORT
STORMWATER ANALYSIS REPORTS
2015 SUMMARY

LOCATION KEY

| | | | |
|---|---|---|---|
| Yeader #1 | Yeader Creek & Fleur | Frink #1 | Frink Creek & SW 42nd |
| Yeader #2 | Yeader Creek & SW 9th | Frink #2 | Frink Creek & Park Ave. |
| Yeader #3 | Yeader Creek & SE 5th | | |
| Yeader #4 | Yeader Creek & Indianola Rd | | |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PROP GLYCOL | ETH GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 01/08/15 | Frink#1 | 9 | 7.8 | 12.0 | < 15 | < 6 | | | < 10.0 | < 10.0 | | | | |
| 01/16/15 | Frink#1 | 50 | 7.9 | 11.3 | < 15 | < 6 | | < 5 | < 10.0 | < 10.0 | < 2.00 | < 2.00 | < 2.00 | < 3.00 |
| 01/23/15 | Frink#1 | 38 | 8.0 | 12.3 | < 15 | < 3 | | | < 10.0 | < 10.0 | | | | |
| 01/30/15 | Frink#1 | 50 | 8.0 | 12.6 | 21 | < 3 | | | < 10.0 | < 10.0 | | | | |
| **MONTHLY AVERAGE** | | **37** | **7.9** | **12.0** | **16.5** | **4.5** | | **5.0** | **10.0** | **10.0** | **2.0** | **2.0** | **2.0** | **3.0** |
| 01/08/15 | Middle#1 | | | | | | | | | | | | | |
| 01/16/15 | Middle#1 | 14 | 7.7 | 12.2 | < 15 | 5 | | < 5 | < 10.0 | < 10.0 | < 2.00 | < 2.00 | < 2.00 | < 3.00 |
| 01/23/15 | Middle#1 | 14 | 8.1 | 12.3 | < 15 | < 3 | | | < 10.0 | < 10.0 | | | | |
| 01/30/15 | Middle#1 | 24 | 8.1 | 12.4 | < 15 | < 3 | | | < 10.0 | < 10.0 | | | | |
| **MONTHLY AVERAGE** | | **17** | **8** | **12** | **15** | **4** | | **5** | **10** | **10** | **2** | **2** | **2** | **3** |
| 01/06/15 | Yeader#1 | 9 | | 11.7 | | | | | < 10.0 | < 10.0 | | | | |
| 01/08/15 | Yeader#1 | 82 | 7.9 | 11.9 | < 15 | < 12 | < 0.40 | | < 10.0 | < 10.0 | | | | |
| 01/13/15 | Yeader#1 | 9 | | 10.8 | | | | | < 10.0 | < 10.0 | | | | |
| 01/16/15 | Yeader#1 | 9 | 7.8 | 10.7 | < 15 | 4 | 0.3 | < 5 | < 10.0 | < 10.0 | < 2.00 | < 2.00 | < 2.00 | < 3.00 |
| 01/21/15 | Yeader#1 | 9 | | | | | | | < 10.0 | 10.3 | | | | |
| 01/22/15 | Yeader#1 | | | 8.8 | | | | | | | | | | |
| 01/23/15 | Yeader#1 | 9 | 7.8 | 9.5 | < 15 | 12 | <0.20 | | < 10.0 | < 10.0 | | | | |
| 01/28/15 | Yeader#1 | 9 | | 8.8 | | | | | < 10.0 | < 10.0 | | | | |
| 01/30/15 | Yeader#1 | 6 | 7.9 | 8.7 | 58 | 22 | <0.20 | | < 10.0 | < 10.0 | | | | |
| **MONTHLY AVERAGE** | | **17** | **7.9** | **10.1** | **25.8** | **12.5** | **0.3** | **5.0** | **10.0** | **10.0** | **2.0** | **2.0** | **2.0** | **3.0** |
| 01/06/15 | Yeader#2 | | | 12.5 | | | | | < 10.0 | < 10.0 | | | | |
| 01/13/15 | Yeader#2 | | | 11.5 | | | | | < 10.0 | < 10.0 | | | | |
| 01/21/15 | Yeader#2 | | | | | | | | < 10.0 | < 10.0 | | | | |
| 01/22/15 | Yeader#2 | | | 11.2 | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01/28/15 | Yeader#2 | | | 11.6 | | | | | < 10.0 | < 10.0 | | | | |
| 01/06/15 | Yeader#3 | | | 12.1 | | | | | < 10.0 | < 10.0 | | | | |
| 01/13/15 | Yeader#3 | | | 12.5 | | | | | < 10.0 | < 10.0 | | | | |
| 01/21/15 | Yeader#3 | | | | | | | | < 10.0 | < 10.0 | | | | |
| 01/22/15 | Yeader#3 | | | 13.4 | | | | | | | | | | |
| 01/28/15 | Yeader#3 | | | 13.1 | | | | | < 10.0 | < 10.0 | | | | |
| 01/06/15 | Yeader#4 | | | 13.2 | | | | | < 10.0 | < 10.0 | | | | |
| 01/13/15 | Yeader#4 | | | 12.0 | | | | | < 10.0 | < 10.0 | | | | |
| 01/21/15 | Yeader#4 | | | | | | | | < 10.0 | < 10.0 | | | | |
| 01/28/15 | Yeader#4 | | | 13.4 | | | | | < 10.0 | < 10.0 | | | | |
| **MONTHLY AVERAGE** | | | | **12.4** | | | | | **10.0** | **10.0** | | | | |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 02/06/15 | Frink#1 | 50 | 7.7 | 12.0 | < 15 | < 3 | | | < 10.0 | < 10.0 | | | | |
| 02/13/15 | Frink#1 | 50 | 7.9 | 12.1 | < 15 | < 3 | | < 5 | < 10.0 | < 10.0 | < 2.00 | < 2.00 | < 2.00 | < 3.00 |
| 02/20/15 | Frink#1 | 50 | 7.1 | 12.3 | < 15 | < 3 | | | < 10.0 | < 10.0 | | | | |
| 02/24/15 | Frink#1 | 50 | 7.7 | 11.7 | < 15 | < 3 | | | < 10.0 | < 10.0 | | | | |
| **MONTHLY AVERAGE** | | **50** | **7.6** | **12.0** | **15.0** | **3.0** | | **5.0** | **10.0** | **10.0** | **2.0** | **2.0** | **2.0** | **3.0** |
| 02/06/15 | Middle#1 | 14 | 7.7 | Frozen | < 15 | < 3 | | | < 10.0 | < 10.0 | | | | |
| 02/13/15 | Middle#1 | 14 | 8.0 | 12.4 | < 15 | < 3 | | < 5 | < 10.0 | < 10.0 | < 2.00 | < 2.00 | < 2.00 | < 3.00 |
| 02/20/15 | Middle#1 | 6 | 7.6 | 12.9 | < 15 | < 3 | | | < 10.0 | < 10.0 | | | | |
| 02/24/15 | Middle#1 | 14 | 7.6 | 12.5 | < 15 | < 3 | | | < 10.0 | < 10.0 | | | | |
| **MONTHLY AVERAGE** | | **12** | **7.7** | **12.6** | **15.0** | **3.0** | | **5** | **10.0** | **10.0** | **2.0** | **2.0** | **2.0** | **3.0** |
| 02/03/15 | Yeader#1 | 14 | | 9.0 | | | | | < 10.0 | 10.6 | | | | |
| 02/06/15 | Yeader#1 | 18 | 7.6 | 9.4 | 75 | 12 | <0.20 | | < 10.0 | < 10.0 | | | | |
| 02/11/15 | Yeader#1 | 14 | | 10.1 | | | | | 21.6 | 21.3 | | | | |
| 02/13/15 | Yeader#1 | 14 | 8.0 | 12.4 | 97 | 51 | <0.20 | < 5 | < 10.0 | < 10.0 | < 2.00 | < 2.00 | < 2.00 | < 3.00 |
| 02/16/15 | Yeader#1 | 6 | | 10.2 | | | | | < 10.0 | < 10.0 | | | | |
| 02/20/15 | Yeader#1 | 6 | 7.6 | 9.3 | 20 | < 12 | 0.207 | | < 10.0 | < 10.0 | | | | |
| 02/24/15 | Yeader#1 | 6 | 7.8 | 9.6 | < 15 | < 6 | 0.246 | | < 10.0 | < 10.0 | | | | |
| 02/27/15 | Yeader#1 | 9 | | 10.6 | | | | | < 10.0 | < 10.0 | | | | |
| **MONTHLY AVERAGE** | | **11** | **7.7** | **10.1** | **51.8** | **20.3** | **0.21** | **5** | **11.5** | **11.5** | **2.0** | **2.0** | **2.0** | **3.0** |
| 02/03/15 | Yeader#2 | | | **11.4** | | | | | < 10.0 | < 10.0 | | | | |
| 02/11/15 | Yeader#2 | | | 12.4 | | | | | < 10.0 | < 10.0 | | | | |
| 02/16/15 | Yeader#2 | | | 12.6 | | | | | < 10.0 | < 10.0 | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 02/27/15 | Yeader#2 | | | 12.1 | | | | | < 10.0 | < 10.0 | | | | |
| 02/03/15 | Yeader#3 | | | 12.2 | | | | | < 10.0 | < 10.0 | | | | |
| 02/11/15 | Yeader#3 | | | 13.4 | | | | | < 10.0 | < 10.0 | | | | |
| 02/16/15 | Yeader#3 | | | 14.3 | | | | | < 10.0 | < 10.0 | | | | |
| 02/27/15 | Yeader#3 | | | 11.7 | | | | | < 10.0 | < 10.0 | | | | |
| 02/03/15 | Yeader#4 | | | 11.8 | | | | | < 10.0 | < 10.0 | | | | |
| 02/11/15 | Yeader#4 | | | 10.9 | | | | | < 10.0 | < 10.0 | | | | |
| 02/16/15 | Yeader#4 | | | 10.8 | | | | | < 10.0 | < 10.0 | | | | |
| 02/27/15 | Yeader#4 | | | 13.6 | | | | | < 10.0 | < 10.0 | | | | |
| **MONTHLY AVERAGE** | | | | **12.3** | | | | | **10.0** | **10.0** | | | | |

| DATE | LOCATION | FLOW GPM | pH S.U. | D.O. METER mg/l | COD mg/l | CBOD mg/l | NH3-N mg/l | OIL & GREASE mg/l | PROPYLENE GLYCOL mg/l | ETHYLENE GLYCOL mg/l | BENZENE ug/l | TOLUENE ug/l | ETHYL-BENZENE ug/l | TOTAL XYLENE ug/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 03/06/15 | Frink#1 | 45 | 7.8 | 11.4 | < 15 | < 3 | | < 5 | < 10.0 | < 10.0 | < 2.00 | < 2.00 | < 2.00 | < 3.00 |
| 03/13/15 | Frink#1 | 50 | 8.0 | 10.3 | 20 | < 3 | | | < 10.0 | < 10.0 | | | | |
| 03/20/15 | Frink#1 | 38 | 7.9 | 9.4 | 39 | < 3 | | | < 10.0 | < 10.0 | | | | |
| 03/27/15 | Frink#1 | 38 | 8.1 | 11.6 | < 23 | < 10 | | | < 10.0 | < 10.0 | | | | |
| **MONTHLY AVERAGE** | | **43** | **7.9** | **10.7** | **24.3** | **4.8** | | **5** | **10.0** | **10.0** | **2.0** | **2.0** | **2.0** | **3.0** |
| 03/06/15 | Middle#1 | 9 | 7.6 | 12.9 | < 15 | < 3 | | < 5 | < 10.0 | < 10.0 | < 2.00 | < 2.00 | < 2.00 | < 3.00 |
| 03/13/15 | Middle#1 | 24 | 7.9 | 10.4 | < 15 | < 3 | | | < 10.0 | < 10.0 | | | | |
| 03/20/15 | Middle#1 | 9 | 7.9 | 10.1 | < 30 | < 3 | | | < 10.0 | < 10.0 | | | | |
| 03/27/15 | Middle#1 | 18 | 8.2 | 12.6 | < 20 | < 3 | | | < 10.0 | < 10.0 | | | | |
| **MONTHLY AVERAGE** | | **15** | **7.9** | **11.5** | **20** | **3** | | **5** | **10.0** | **10.0** | **2** | **2** | **2** | **3** |
| 03/04/15 | Yeader#1 | 14 | | 9.5 | | | | | < 10.0 | < 10.0 | | | | |
| 03/06/15 | Yeader#1 | 14 | 7.7 | 9.5 | 27 | 8 | <0.20 | < 5 | < 10.0 | < 10.0 | < 2.00 | < 2.00 | < 2.00 | < 3.00 |
| 03/10/15 | Yeader#1 | 14 | | 7.5 | | | | | 15.6 | 31.4 | | | | |
| 03/13/15 | Yeader#1 | 9 | 7.3 | 7.5 | 365 | **215** | <0.20 | | 44.0 | 13.3 | | | | |
| 03/18/15 | Yeader#1 | 9 | | 7.1 | | | | | < 10.0 | < 10.0 | | | | |
| 03/20/15 | Yeader#1 | 9 | 7.5 | 8.3 | 76 | 30 | <0.20 | | < 10.0 | < 10.0 | | | | |
| 03/25/15 | Yeader#1 | 38 | | 8.7 | | | | | 33.8 | < 10.0 | | | | |
| 03/27/15 | Yeader#1 | 18 | 7.8 | 7.8 | 197 | 124 | <0.20 | | 21.6 | < 10.0 | | | | |
| **MONTHLY AVERAGE** | | **15** | **7.6** | **8.2** | **166** | **94** | **0.40** | **5** | **19.4** | **13.1** | **2.0** | **2.0** | **2.0** | **3.0** |
| 03/04/15 | Yeader#2 | | | 13.2 | | | | | < 10.0 | < 10.0 | | | | |
| 03/10/15 | Yeader#2 | | | 10.7 | | | | | < 10.0 | < 10.0 | | | | |
| 03/18/15 | Yeader#2 | | | 9.4 | | | | | < 10.0 | < 10.0 | | | | |
| 03/25/15 | Yeader#2 | | | 9.5 | | | | | < 10.0 | < 10.0 | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 03/04/15 | Yeader#3 | | | 13.2 | | | | | < 10.0 | < 10.0 | | | | |
| 03/10/15 | Yeader#3 | | | 11.6 | | | | | < 10.0 | < 10.0 | | | | |
| 03/18/15 | Yeader#3 | | | 14.1 | | | | | < 10.0 | < 10.0 | | | | |
| 03/25/15 | Yeader#3 | | | 10.4 | | | | | < 10.0 | < 10.0 | | | | |
| 03/06/15 | Yeader#4 | | | 8.5 | | | | | < 10.0 | < 10.0 | | | | |
| 03/10/15 | Yeader#4 | | | 8.5 | | | | | < 10.0 | < 10.0 | | | | |
| 03/18/15 | Yeader#4 | | | 15.0 | | | | | < 10.0 | < 10.0 | | | | |
| 03/25/15 | Yeader#4 | | | 9.5 | | | | | < 10.0 | < 10.0 | | | | |
| **MONTHLY AVERAGE** | | | | **11.1** | | | | | **10.0** | **10.0** | | | | |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | ROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 04/03/15 | Frink#1 | 69 | 8.0 | 10.8 | < 20 | < 3 | | < 5 | < 10.0 | < 10.0 | < 2.00 | < 2.00 | < 2.00 | < 3.00 |
| 04/08/15 | Frink#1 | 88 | 8.3 | 10.9 | < 20 | < 3 | | | < 10.0 | < 10.0 | | | | |
| 04/16/15 | Frink#1 | 69 | 8.3 | 10.2 | 28 | < 3 | | | < 10.0 | < 10.0 | | | | |
| 04/23/15 | Frink#1 | 50 | 8.0 | 11.4 | < 20 | < 3 | | | < 10.0 | < 10.0 | | | | |
| **MONTHLY AVERAGE** | | **69** | **8.2** | **10.8** | **22.0** | **3.0** | | **5** | **10.0** | **10.0** | **2.0** | **2.0** | **2.0** | **3.0** |
| 04/03/15 | Middle#1 | 24 | 8.1 | 11.3 | < 20 | < 3 | | < 5 | < 10.0 | < 10.0 | < 2.00 | < 2.00 | < 2.00 | < 3.00 |
| 04/08/15 | Middle#1 | 24 | 8.1 | 9.7 | 69 | 32 | | | < 10.0 | < 10.0 | | | | |
| 04/16/15 | Middle#1 | 24 | 8.4 | 11.0 | < 20 | < 3 | | | < 10.0 | < 10.0 | | | | |
| 04/23/15 | Middle#1 | 24 | 8.2 | 12.1 | < 20 | < 3 | | | < 10.0 | < 10.0 | | | | |
| **MONTHLY AVERAGE** | | **24** | **8.2** | **11.0** | **32.3** | **10.3** | | **5** | **10.0** | **10.0** | **2.0** | **2.0** | **2.0** | **3.0** |
| 04/01/15 | Yeader#1 | 18 | | 5.8 | | | | | < 10.0 | < 10.0 | | | | |
| 04/03/15 | Yeader#1 | 50 | 7.7 | 8.4 | 107 | 58 | <0.20 | < 5 | < 10.0 | < 10.0 | < 2.00 | < 2.00 | < 2.00 | < 3.00 |
| 04/08/15 | Yeader#1 | 59 | 7.6 | 7.9 | 57 | 25 | <0.57 | | < 10.0 | < 10.0 | | | | |
| 04/10/15 | Yeader#1 | 24 | | 7.8 | | | | | < 10.0 | < 10.0 | | | | |
| 04/14/15 | Yeader#1 | 18 | | 7.2 | | | | | < 10.0 | < 10.0 | | | | |
| 04/16/15 | Yeader#1 | 24 | 7.8 | 7.2 | 62 | 34 | 0.21 | | < 10.0 | < 10.0 | | | | |
| 04/23/15 | Yeader#1 | 24 | 7.8 | 8.6 | 35 | 23 | <0.20 | | < 10.0 | < 10.0 | | | | |
| 04/24/15 | Yeader#1 | 24 | | 8.0 | | | | | < 10.0 | < 10.0 | | | | |
| 04/29/15 | Yeader#1 | 9 | | 7.5 | | | | | < 10.0 | < 10.0 | | | | |
| **MONTHLY AVERAGE** | | **28** | **7.7** | **7.6** | **65.3** | **35.0** | **0.39** | **5** | **10.0** | **10.0** | **2.0** | **2.0** | **2.0** | **3.0** |
| 04/01/15 | Yeader#2 | | | 8.0 | | | | | < 10.0 | < 10.0 | | | | |
| 04/10/15 | Yeader#2 | | | 9.8 | | | | | < 10.0 | < 10.0 | | | | |
| 04/14/15 | Yeader#2 | | | 9.1 | | | | | < 10.0 | < 10.0 | | | | |
| 04/24/15 | Yeader#2 | | | 9.1 | | | | | < 10.0 | < 10.0 | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 04/29/15 | Yeader#2 | | | 9.2 | | | | | | < 10.0 | < 10.0 | | | |
| 04/01/15 | Yeader#3 | | | 9.5 | | | | | | < 10.0 | < 10.0 | | | |
| 04/10/15 | Yeader#3 | | | 10.4 | | | | | | < 10.0 | < 10.0 | | | |
| 04/14/15 | Yeader#3 | | | 9.0 | | | | | | < 10.0 | < 10.0 | | | |
| 04/24/15 | Yeader#3 | | | 10.9 | | | | | | < 10.0 | < 10.0 | | | |
| 04/29/15 | Yeader#3 | | | 9.7 | | | | | | < 10.0 | < 10.0 | | | |
| 04/01/15 | Yeader#4 | | | 9.3 | | | | | | < 10.0 | < 10.0 | | | |
| 04/10/15 | Yeader#4 | | | 8.2 | | | | | | < 10.0 | < 10.0 | | | |
| 04/14/15 | Yeader#4 | | | 6.4 | | | | | | < 10.0 | < 10.0 | | | |
| 04/24/15 | Yeader#4 | | | 10.3 | | | | | | < 10.0 | < 10.0 | | | |
| 04/29/15 | Yeader#4 | | | 7.4 | | | | | | < 10.0 | < 10.0 | | | |
| **MONTHLY AVERAGE** | | | | **9.1** | | | | | | **10.0** | **10.0** | | | |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 05/01/15 | Frink#1 | 69 | 8.1 | 10.1 | < 20 | < 3 | | < 5 | < 10.0 | < 10.0 | < 2.00 | < 2.00 | < 2.00 | < 3.00 |
| 05/08/15 | Frink#1 | 69 | 8.3 | 9.2 | < 20 | < 3 | | | < 10.0 | < 10.0 | | | | |
| 05/11/15 | Frink#1 | 149 | 8.2 | 9.5 | 67 | < 3 | | | < 10.0 | < 10.0 | | | | |
| 05/21/15 | Frink#1 | 45 | 8.1 | 8.9 | < 20 | < 3 | | | < 10.0 | < 10.0 | | | | |
| 05/28/15 | Frink#1 | 149 | 7.9 | 8.7 | < 20 | < 3 | | | < 10.0 | < 10.0 | | | | |
| **MONTHLY AVERAGE** | | **96** | **8.1** | **9.3** | **29.4** | **3.0** | | **5** | **10.0** | **10.0** | **2.0** | **2.0** | **2.0** | **3.0** |
| 05/01/15 | Middle#1 | 24 | 8.2 | 11.4 | < 20 | < 3 | | < 5 | < 10.0 | < 10.0 | < 2.00 | < 2.00 | < 2.00 | < 3.00 |
| 05/08/15 | Middle#1 | 24 | 8.4 | 10.2 | < 20 | < 3 | | | < 10.0 | < 10.0 | | | | |
| 05/11/15 | Middle#1 | 9 | 8.2 | 10.4 | < 20 | < 3 | | | < 10.0 | < 10.0 | | | | |
| 05/21/15 | Middle#1 | 14 | 8.2 | 10.0 | < 20 | < 3 | | | < 10.0 | < 10.0 | | | | |
| 05/28/15 | Middle#1 | 38 | 8.1 | 9.1 | 26 | < 3 | | | < 10.0 | < 10.0 | | | | |
| **MONTHLY AVERAGE** | | **22** | **8.2** | **10.2** | **21.2** | **3.0** | | **5** | **10.0** | **10.0** | **2.0** | **2.0** | **2.0** | **3.0** |
| 05/01/15 | Yeader#1 | 9 | 7.9 | 8.4 | 25 | 16 | <0.20 | < 5 | < 10.0 | < 10.0 | < 2.00 | < 2.00 | < 2.00 | < 3.00 |
| 05/06/15 | Yeader#1 | 18 | | 7.6 | | | | | < 10.0 | < 10.0 | | | | |
| 05/08/15 | Yeader#1 | 18 | 7.8 | 8.0 | 35 | 5 | 0.42 | | < 10.0 | < 10.0 | | | | |
| 05/11/15 | Yeader#1 | 24 | 7.9 | 8.4 | 40 | 7 | <0.20 | | < 10.0 | < 10.0 | | | | |
| 05/13/15 | Yeader#1 | 38 | | 7.5 | | | | | < 10.0 | < 10.0 | | | | |
| 05/19/15 | Yeader#1 | 14 | | 8.3 | | | | | < 10.0 | < 10.0 | | | | |
| 05/21/15 | Yeader#1 | 14 | 7.6 | 7.7 | < 20 | 4 | 0.26 | | < 10.0 | < 10.0 | | | | |
| 05/27/15 | Yeader#1 | 52 | 7.6 | 7.9 | | | | | < 10.0 | < 10.0 | | | | |
| 05/28/15 | Yeader#1 | 38 | | 8.1 | 26 | < 6 | <0.20 | | < 10.0 | < 10.0 | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MONTHLY AVERAGE** | | **25** | **7.7** | **8.0** | **29.2** | **7.6** | **0.26** | **5** | **10.0** | **10.0** | **2.0** | **2.0** | **2.0** | **3.0** |
| 05/06/15 | Yeader#2 | | | 7.1 | | | | | < 10.0 | < 10.0 | | | | |
| 05/13/15 | Yeader#2 | | | 8.2 | | | | | < 10.0 | < 10.0 | | | | |
| 05/19/15 | Yeader#2 | | | 8.2 | | | | | < 10.0 | < 10.0 | | | | |
| 05/27/15 | Yeader#2 | | | 7.3 | | | | | < 10.0 | < 10.0 | | | | |
| 05/06/15 | Yeader#3 | | | 6.6 | | | | | < 10.0 | < 10.0 | | | | |
| 05/13/15 | Yeader#3 | | | 8.3 | | | | | < 10.0 | < 10.0 | | | | |
| 05/19/15 | Yeader#3 | | | 9.4 | | | | | < 10.0 | < 10.0 | | | | |
| 05/27/15 | Yeader#3 | | | 8.0 | | | | | < 10.0 | < 10.0 | | | | |
| 05/06/15 | Yeader#4 | | | 4.2 | | | | | < 10.0 | < 10.0 | | | | |
| 05/13/15 | Yeader#4 | | | 7.4 | | | | | < 10.0 | < 10.0 | | | | |
| 05/19/15 | Yeader#4 | | | 7.5 | | | | | < 10.0 | < 10.0 | | | | |
| 05/27/15 | Yeader#4 | | | 8.6 | | | | | < 10.0 | < 10.0 | | | | |
| **MONTHLY AVERAGE** | | | | **7.6** | | | | | **10.0** | **10.0** | | | | |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 06/22/15 | Frink#1 | 88 | | 8.3 | | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **88.0** | | **8.3** | | | | **5.0** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 06/22/15 | Middle#1 | 38 | | 8.7 | | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **38.0** | | **8.7** | | | | **5.0** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 06/22/15 | Yeader#1 | 24 | | 6.9 | | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **24.0** | | **6.9** | | | | **5.0** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 08/24/15 | Frink#1 | 107 | | 8.7 | | | | < 5 | | | | | | |
| 08/26/15 | Frink#1 | | | | | | | | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **107.0** | | **8.7** | | | | **5.0** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 08/24/15 | Middle#1 | 38 | | 9.5 | | | | < 5 | | | | | | |
| 08/26/15 | Middle#1 | | | | | | | | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **38.0** | | **9.5** | | | | **5.0** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 08/24/15 | Yeader#1 | 38 | | 8.0 | | | | < 5 | | | | | | |
| 08/26/15 | Yeader#1 | | | | | | | | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **38.0** | | **8.0** | | | | **5.0** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 09/28/15 | Frink#1 | 69 | | 9.5 | | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **69.0** | | **9.5** | | | | **5.0** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 09/28/15 | Middle#1 | 24 | | 10.3 | | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **24.0** | | **10.3** | | | | **5.0** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 09/28/15 | Yeader#1 | 24 | | 7.9 | | | | < 5 | | | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **24.0** | | **7.9** | | | | **5.0** | **0.0** | **0.0** | **1.0** | **1.0** | **1.0** | **2.0** |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 10/06/15 | Frink#1 | 69 | 8.1 | 10.1 | < 20 | < 5 | | | < 1.0 | < 1.0 | | | | |
| 10/16/15 | Frink#1 | 146 | 8.2 | 10.8 | < 20 | < 3 | | | < 1.0 | < 1.0 | | | | |
| 10/21/15 | Frink#1 | 149 | 8.0 | 8.9 | < 20 | < 4 | | | < 1.0 | < 1.0 | | | | |
| 10/30/15 | Frink#1 | 50 | 8.0 | 11.0 | 23 | < 4 | | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **104** | **8.1** | **10.2** | **20.8** | **4.0** | | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 10/06/15 | Middle#1 | 38 | 8.2 | 10.8 | 43 | < 5 | | | < 1.0 | < 1.0 | | | | |
| 10/16/15 | Middle#1 | 9 | 8.5 | 14.0 | < 20 | < 3 | | | < 1.0 | < 1.0 | | | | |
| 10/21/15 | Middle#1 | 24 | 8.2 | 11.6 | < 20 | 5 | | | < 1.0 | < 1.0 | | | | |
| 10/30/15 | Middle#1 | 24 | 8.2 | 11.6 | < 20 | < 5 | | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **24** | **8.3** | **12.0** | **25.8** | **4.5** | | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 10/06/15 | Yeader#1 | 24 | 7.7 | 8.1 | 76 | < 5 | < 0.20 | | < 1.0 | < 1.0 | | | | |
| 10/09/15 | Yeader#1 | 24 | | 8.7 | | | | | < 1.0 | < 1.0 | | | | |
| 10/14/15 | Yeader#1 | 14 | | 7.5 | | | | | < 1.0 | < 1.0 | | | | |
| 10/16/15 | Yeader#1 | 24 | 7.7 | 8.9 | < 20 | < 3 | < 0.20 | | < 1.0 | < 1.0 | | | | |
| 10/21/15 | Yeader#1 | 24 | 7.6 | 7.8 | < 20 | < 5 | < 0.20 | | < 1.0 | < 1.0 | | | | |
| 10/23/15 | Yeader#1 | 107 | | 8.9 | | | | | 5.0 | < 1.0 | | | | |
| 10/28/15 | Yeader#1 | 52 | | 8.8 | | | | | 2.1 | < 1.0 | | | | |
| 10/30/15 | Yeader#1 | 50 | 7.8 | 9.2 | 24 | < 5 | < 0.20 | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| **MONTHLY AVERAGE** | | **40** | **7.7** | **8.5** | **35.0** | **4.5** | **0.2** | **5** | **1.6** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 10/09/15 | Yeader#2 | | | 9.3 | | | | | < 1.0 | < 1.0 | | | | |
| 10/14/15 | Yeader#2 | | | 8.3 | | | | | < 1.0 | < 1.0 | | | | |
| 10/23/15 | Yeader#2 | | | 8.0 | | | | | 5.0 | < 1.0 | | | | |
| 10/28/15 | Yeader#2 | | | 8.6 | | | | | < 1.0 | < 1.0 | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10/09/15 | Yeader#3 | | | 9.4 | | | | | < 1.0 | < 1.0 | | | | |
| 10/14/15 | Yeader#3 | | | 7.8 | | | | | < 1.0 | < 1.0 | | | | |
| 10/23/15 | Yeader#3 | | | 7.2 | | | | | < 1.0 | < 1.0 | | | | |
| 10/28/15 | Yeader#3 | | | 7.9 | | | | | < 1.0 | < 1.0 | | | | |
| 10/09/15 | Yeader#4 | | | 6.7 | | | | | < 1.0 | < 1.0 | | | | |
| 10/14/15 | Yeader#4 | | | 7.9 | | | | | < 1.0 | < 1.0 | | | | |
| 10/23/15 | Yeader#4 | | | 6.8 | | | | | < 1.0 | < 1.0 | | | | |
| 10/28/15 | Yeader#4 | | | 6.7 | | | | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | | | **7.9** | | | | | **1.3** | **1.0** | | | | |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 11/03/15 | Frink#1 | 50 | 8.0 | 9.2 | < 20 | < 5 | | | < 1.0 | < 1.0 | | | | |
| 11/10/15 | Frink#1 | 50 | 8.1 | 10.5 | 21 | < 5 | | | | | | | | |
| 11/13/15 | Frink#1 | | | | | | | | < 1.0 | < 1.0 | | | | |
| 11/17/15 | Frink#1 | 197 | 7.9 | 8.9 | 38 | < 5 | | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 11/25/15 | Frink#1 | 107 | 7.8 | 10.1 | 24 | 9 | | | 6.2 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **101** | **8.0** | **9.7** | **25.8** | **6.0** | | **5** | **2.3** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 11/03/15 | Middle#1 | 18 | 8.3 | 11.1 | < 20 | < 5 | | | < 1.0 | < 1.0 | | | | |
| 11/10/15 | Middle#1 | 24 | 8.4 | 12.9 | 19 | < 5 | | | | | | | | |
| 11/13/15 | Middle#1 | | | | | | | | < 1.0 | < 1.0 | | | | |
| 11/17/15 | Middle#1 | 38 | 7.9 | 9.2 | < 20 | < 5 | | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 11/25/15 | Middle#1 | 24 | 8.0 | 10.9 | < 20 | < 5 | | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **26** | **8.2** | **11.0** | **19.8** | **5.0** | | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 11/03/15 | Yeader#1 | 24 | 7.7 | 8.0 | < 20 | < 5 | < 0.20 | | < 1.0 | < 1.0 | | | | |
| 11/05/15 | Yeader#1 | 10 | | 7.5 | | | | | < 1.0 | < 1.0 | | | | |
| 11/10/15 | Yeader#1 | 14 | 7.8 | 8.1 | 21 | < 5 | < 0.20 | | | | | | | |
| 11/12/15 | Yeader#1 | 24 | | 8.1 | | | | | < 1.0 | < 1.0 | | | | |
| 11/13/15 | Yeader#1 | | | | | | | | < 1.0 | < 1.0 | | | | |
| 11/17/15 | Yeader#1 | 88 | 8.8 | 8.8 | < 20 | 5 | < 0.20 | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 11/20/15 | Yeader#1 | 14 | | 9.5 | | | | | < 1.0 | < 1.0 | | | | |
| 11/24/15 | Yeader#1 | 52 | | 9.1 | | | | | 2.3 | < 1.0 | | | | |
| 11/25/15 | Yeader#1 | 24 | 7.6 | 9.1 | 26 | 6 | < 0.20 | | 2.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **31** | **8.0** | **8.5** | **21.8** | **5.3** | **0.2** | **5** | **1.3** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 11/05/15 | Yeader#2 | | | 7.3 | | | | | < 1.0 | < 1.0 | | | | |
| 11/12/15 | Yeader#2 | | | 8.5 | | | | | < 1.0 | < 1.0 | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/20/15 | Yeader#2 | | | 10.2 | | | | | | < 1.0 | < 1.0 | | | |
| 11/24/15 | Yeader#2 | | | 9.3 | | | | | | < 1.0 | < 1.0 | | | |
| 11/05/15 | Yeader#3 | | | 5.9 | | | | | | < 1.0 | < 1.0 | | | |
| 11/12/15 | Yeader#3 | | | 7.7 | | | | | | < 1.0 | < 1.0 | | | |
| 11/20/15 | Yeader#3 | | | 10.1 | | | | | | < 1.0 | < 1.0 | | | |
| 11/24/15 | Yeader#3 | | | 9.4 | | | | | | < 1.0 | < 1.0 | | | |
| 11/05/15 | Yeader#4 | | | 5.3 | | | | | | < 1.0 | < 1.0 | | | |
| 11/12/15 | Yeader#4 | | | 6.8 | | | | | | < 1.0 | < 1.0 | | | |
| 11/20/15 | Yeader#4 | | | 7.6 | | | | | | < 1.0 | < 1.0 | | | |
| 11/24/15 | Yeader#4 | | | 10.5 | | | | | | < 1.0 | < 1.0 | | | |
| **MONTHLY AVERAGE** | | | | **8.2** | | | | | | **1.0** | **1.0** | | | |

| DATE | LOCATION | FLOW | pH | D.O. METER | COD | CBOD | NH3-N | OIL & GREASE | PROPYLENE GLYCOL | ETHYLENE GLYCOL | BENZENE | TOLUENE | ETHYL-BENZENE | TOTAL XYLENE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | S.U. | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | ug/l | ug/l | ug/l | ug/l |
| 12/02/15 | Frink#1 | 167 | 7.8 | 10.7 | 45 | 12 | | | 2.7 | < 1.0 | | | | |
| 12/09/15 | Frink#1 | 69 | 7.9 | 10.4 | 21 | < 5 | | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 12/14/15 | Frink#1 | > 3000 | 10.7 | 10.7 | 172 | 109 | | | 87.6 | < 1.0 | | | | |
| 12/21/15 | Frink#1 | 107 | 7.9 | 11.1 | < 20 | < 5 | | | < 1.0 | < 1.0 | | | | |
| 12/28/15 | Frink#1 | 237 | 7.9 | 12.3 | < 20 | < 5 | | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **716** | **8.4** | **11.0** | **56** | **27** | | **5** | **18.7** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 12/02/15 | Middle#1 | 88 | 7.6 | 11.1 | < 20 | < 5 | | | < 1.0 | < 1.0 | | | | |
| 12/09/15 | Middle#1 | 45 | 8.2 | 11.1 | 26 | < 5 | | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 12/14/15 | Middle#1 | 371 | 7.8 | 10.8 | 23 | < 5 | | | 1.2 | < 1.0 | | | | |
| 12/21/15 | Middle#1 | 52 | 8.0 | 11.2 | < 20 | < 5 | | | < 1.0 | < 1.0 | | | | |
| 12/28/15 | Middle#1 | 149 | 8.0 | 11.9 | < 20 | < 5 | | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | **141** | **7.9** | **11.2** | **22** | **5** | | **5** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **2.0** |
| 12/02/15 | Yeader#1 | 38 | 7.6 | 9.1 | 61 | 30 | < 0.20 | | 14.6 | < 1.0 | | | | |
| 12/04/15 | Yeader#1 | 30 | | 9.1 | | | | | 1.1 | < 1.0 | | | | |
| 12/09/15 | Yeader#1 | 18 | 7.7 | 9.2 | 27 | < 5 | < 0.20 | < 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 2.0 |
| 12/11/15 | Yeader#1 | 24 | | 9.3 | | | | | < 1.0 | < 1.0 | | | | |
| 12/14/15 | Yeader#1 | 17720 | 9.3 | 10.0 | 374 | **249** | < 0.20 | | 92.2 | 59.3 | | | | |
| 12/18/15 | Yeader#1 | 38 | | 10.1 | | | | | < 1.0 | < 1.0 | | | | |
| 12/21/15 | Yeader#1 | 38 | 7.7 | 10.7 | < 20 | 5 | < 0.20 | | < 1.0 | < 1.0 | | | | |
| 12/22/15 | Yeader#1 | 38 | | 9.7 | | | | | < 1.0 | < 1.0 | | | | |
| 12/28/15 | Yeader#1 | 167 | 7.6 | 10.8 | 77 | 5 | < 0.20 | | < 1.0 | < 1.0 | | | | |
| 12/30/15 | Yeader#1 | 197 | | 10.8 | | | | | 2.1 | < 1.0 | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MONTHLY AVERAGE** | | **1831** | **8.0** | **9.9** | **112** | **59** | **0.20** | **5** | **11.6** | **6.8** | **1.0** | **1.0** | **1.0** | **2.0** |
| 12/04/15 | Yeader#2 | | | 9.7 | | | | | < 1.0 | < 1.0 | | | | |
| 12/11/15 | Yeader#2 | | | 10.5 | | | | | < 1.0 | < 1.0 | | | | |
| 12/18/15 | Yeader#2 | | | 11.4 | | | | | < 1.0 | < 1.0 | | | | |
| 12/22/15 | Yeader#2 | | | 10.2 | | | | | < 1.0 | < 1.0 | | | | |
| 12/30/15 | Yeader#2 | | | 11.2 | | | | | < 1.0 | < 1.0 | | | | |
| 12/04/15 | Yeader#3 | | | 10.5 | | | | | < 1.0 | < 1.0 | | | | |
| 12/11/15 | Yeader#3 | | | 10.4 | | | | | < 1.0 | < 1.0 | | | | |
| 12/18/15 | Yeader#3 | | | 11.8 | | | | | < 1.0 | < 1.0 | | | | |
| 12/22/15 | Yeader#3 | | | 10.0 | | | | | < 1.0 | < 1.0 | | | | |
| 12/30/15 | Yeader#3 | | | 11.5 | | | | | < 1.0 | < 1.0 | | | | |
| 12/04/15 | Yeader#4 | | | 9.7 | | | | | < 1.0 | < 1.0 | | | | |
| 12/11/15 | Yeader#4 | | | 10.6 | | | | | < 1.0 | < 1.0 | | | | |
| 12/18/15 | Yeader#4 | | | 11.1 | | | | | < 1.0 | < 1.0 | | | | |
| 12/22/15 | Yeader#4 | | | 9.7 | | | | | < 1.0 | < 1.0 | | | | |
| 12/30/15 | Yeader#4 | | | 11.4 | | | | | < 1.0 | < 1.0 | | | | |
| **MONTHLY AVERAGE** | | | | **10.6** | | | | | **1.0** | **1.0** | | | | |

# Storm Water Annual Facility Inspection

| General Information | | | |
|---|---|---|---|
| **Facility Name** | Des Moines Airport Authority | | |
| **Facility Physical Address** | 5800 Fleur Drive<br>Des Moines, IA 50321 | | |
| **Permit No.** | 77-27-0-08 | | |
| **Date of Inspection** | 12/10/19 | **Start/End Time** | 8:30 – 12:30 |
| **Lead Inspector Name and Title** | Katie Goff, Environmental Scientist | | |
| **Additional Inspector(s) Name and Title(s)** | Cole Steffes, Project Engineer | | |
| **Contact Person and Title** | Katie Goff, Environmental Scientist | | |
| **Contact Phone/Email** | 515-251-2529 | | |

**Weather Information**

**Weather at time of this inspection?**
☒ Clear ☒ Cloudy ☐ Rain ☐ Sleet ☐ Fog ☒ Snow ☐ High Winds
☐ Other: Temperature: 25° F

**Discharge Information**

**Have any previously unidentified discharges of pollutants occurred since the last inspection?** ☐ Yes ☒ No
**If yes, describe:**

**Are there any discharges occurring at the time of inspection?** ☒ Yes ☐ No
**If yes, describe:** normal flow

## CERTIFICATION STATEMENTS

**Inspector Certification:** completed by the person who conducted the site inspection prior to submitting this form to the person with signature authority in accordance with Permit No. 77-27-0-08, Part VI.E.

"I certify that this report is true, accurate, and complete, to the best of my knowledge and belief."

**Print name and title:** Katie Goff, environmental scientist

**Signature:** [signature] **Date:** 12-10-19

**Permittee Certification:** person with signature authority in accordance with Permit No. 77-27-0-08, Part VI.E.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

**Print name and title:** Cole Steffes, DSM Airport

**Signature:** Cole Steffes **Date:** 12/11/2019

**Non-Compliance**

Describe any incidents of non-compliance observed and not described above:

Housekeeping item: Monitor glycol tanks for spillage. If a spill occurs, clean it up. These tanks are within the containment area and drain to a storage tank, however if spillage occurs during transfer, this could create a slip or fall situation or a nuisance situation if not contained and cleaned up.

New construction of storm water management basin near Outfall # 3 is not currently stabilized by seeding or other structural containment measures. Stabilization of exposed soil needs to happen as soon as possible to avoid sediment erosion leaving the site.

**Additional Control Measures**

Describe any additional control measures needed to comply with the permit requirements:

**Notes**

Use this space for any additional notes or observations from the inspection:

Outfall #1: Orange color in channel due to algae growth, foul smell, cloudy water, unsightly appearance. This appearance is likely due to algal growth that may be aided by low levels of glycol contamination. Glycol and CBOD levels did not exceed permit parameters for the November sampling report. The orange color of the algae indicates precipitated iron, which may be coming from groundwater in this area. Algal growth may be symbiotic to low-levels of glycol from the outfall water. This is an on-going issue and concerns about aesthetics, smells, and meeting permit parameters should continue to be monitored.

Outfall #2: No concerns of appearance.

Outfall #3: Sediment is accumulating in the outfall structure from exposed soil in new construction of the storm water management basin, north of the outfall. The area should be stabilized as soon as possible to avoid sediment leaving the site. Scour is occurring in the area north of new construction of the storm water management basin from a drainage pipe. The drainage pipe has 5-6 feet of drop into a pool that is currently scouring and will continue to scour unless otherwise stabilized. It is recommended that structural changes be made to this pipe to avoid future scour. This could include filling the scour pool with riprap, removing the pipe or “daylighting” the stream in this area, or another anti-degradation or maintenance tactic.

**Drainage Area:** 1 **Outfall:** 001 Fleur Drive, Yeader Creek
**Facilities/Land Use:** Passenger Terminal, Short- and Long-term Parking, Air Cargo Building

| Outfall Conditions | Inspection Results | Comments |
|---|---|---|
| **Discharging** | ☒Yes ☐No | |
| **Conditions** | ☐Dry ☒Wet | |
| **General Drainage** | ☐ N/A | orange algae / bacteria growth cloudy water smell |
| **Odor** | ☒Yes ☐No | |
| **Oil Sheen** | ☐Yes ☒No | |
| **Debris (floating or settled)** | ☒Yes ☐No | |
| **Foam** | ☒Yes ☐No | |
| **Color** | ☒Yes ☐No | |
| **Outfall/Discharge** | ☐ N/A | orange algae / bacteria growth cloudy water smell |
| **Odor** | ☒Yes ☐No | |
| **Oil Sheen** | ☐Yes ☒No | |
| **Debris (floating or settled)** | ☒Yes ☐No | |
| **Foam** | ☒Yes ☐No | |
| **Color** | ☒Yes ☐No | |

| Area/Activity | Inspection Results | Controls Adequate (appropriate, effective, and operating)? | Comments and/or Corrective Action Needed |
|---|---|---|---|
| **Short and Long-Term Vehicle Parking** | | ☒Yes ☐No | |
| **Debris/Spills Identified** | ☐Yes ☒No | | |
| **Oil Sheen** | ☐Yes ☒No | | |
| **Terminal Blg Solid Waste Disposal** | | ☒Yes ☐No | |
| **Debris** | ☐Yes ☒No | | |
| **Lids Not in Closed Position** | ☐Yes ☒No | | |
| **Poor Housekeeping** | ☐Yes ☒No | | |
| **Storm Water Detention Basin** | | ☒Yes ☐No | |
| **Debris Present** duck pond | ☐Yes ☒No | | |
| **Overgrown Vegetation** | ☐Yes ☒No | | |
| **Flow Impediment(s)** | ☐Yes ☒No | | |
| **Deteriorating Walls or Bottom** | ☐Yes ☒No | | |
| **Signs of Overflow** | ☐Yes ☒No | | |
| **Sediment/Erosion Control** | | ☒Yes ☐No | |
| **Riprap in Poor Condition** | ☐Yes ☒No ☐ N/A | | |
| **Vegetated Areas Not Relatively Free of Erosion** | ☐Yes ☒No ☐ N/A | | |
| **Vegetative Buffers in Poor Condition** | ☐Yes ☒No ☐ N/A | | |

**Additional Comments:**
Are monthly water quality tests meeting permit parameters?
Aesthetic / smell concern from outfall

**Drainage Area:** 2 **Outfall:** 002 Frink Creek
**Facilities/Land Use:** Runway/Taxi/Apron, ANG, Signature, Fly DSM, De-icing Apron, Cargo, Fed-Ex, Farm fields located outside the gate

| Outfall Conditions | Inspection Results | Comments |
|---|---|---|
| **Discharging** | ☒Yes ☐No | |
| **Conditions** | ☐Dry ☒Wet | |
| **General Drainage** | ☐ N/A | some foam in creek, cream colored |
| **Odor** | ☐Yes ☒No | |
| **Oil Sheen** | ☐Yes ☒No | |
| **Debris (floating or settled)** | ☐Yes ☒No | |
| **Foam** | ☒Yes ☐No | |
| **Color** | ☐Yes ☒No | |
| **Outfall/Discharge** | ☐ N/A | |
| **Odor** | ☐Yes ☒No | |
| **Oil Sheen** | ☐Yes ☒No | |
| **Debris (floating or settled)** | ☐Yes ☒No | |
| **Foam** | ☐Yes ☒No | |
| **Color** | ☐Yes ☒No | |

| Area/Activity | Inspection Results | Controls Adequate (appropriate, effective, and operating)? | Corrective Action Needed and Notes |
|---|---|---|---|
| **Deicing Operations** | ☐ N/A | ☒Yes ☐No | Deicing operations occuring, snow accumulation frozen/slush glycol on apron |
| **Spills/Standing Liquid** | ☐Yes ☒No | | |
| **Stained Pavement** | ☒Yes ☐No | | |
| **Deteriorated Pavement Seams** | ☒Yes ☐No | | |
| **Poor Work Practices** | ☐Yes ☒No | | |
| **Fluids Not Directed toward Deicing Basin** | ☐Yes ☒No | | |
| **Aircraft Fueling Areas** | ☐ N/A | ☒Yes ☐No | Snow/deicer slush |
| **Leaks/Overflow/Spills** | ☐Yes ☒No | | |
| **Standing Liquid** | ☒Yes ☐No | | |
| **Cracks in Mobile Refuelers** | ☒Yes ☒No | | |
| **Maintenance Problems** | ☐Yes ☒No | | |
| **Poor Work Practices** | ☐Yes ☒No | | |
| **Fuel Farm** | | ☒Yes ☐No | |
| **Leaks/Overflow/Spills** | ☐Yes ☒No | | |
| **Cracks in tanks** | ☐Yes ☒No | | |
| **Standing Liquid** | ☐Yes ☒No | | |
| **Stained Concrete or Soil** | ☐Yes ☒No | | |
| **Deteriorated Concrete Seams** | ☐Yes ☒No | | |
| **Distressed Vegetation** | ☐Yes ☒No | | |
| **Tank Operation Not Secured** | ☐Yes ☒No | | |
| **Poor Housekeeping/Work Practices** | ☐Yes ☒No | | |
| **Oil or Sheen In Loading/Unloading Secondary Containment** | ☐Yes ☒No | | |
| **Maintenance Facility Vehicle Parking** | | ☒Yes ☐No | |
| **Debris/Spills Identified** | ☐Yes ☒No | | |
| **Oil Sheen** | ☐Yes ☒No | | |
| | | | |

| Area/Activity | Inspection Results | Controls Adequate (appropriate, effective, and operating)? | Corrective Action Needed and Notes |
|---|---|---|---|
| **Storm Water Detention Basin** | | ☒Yes ☐No | some dirt covering manhole |
| **Debris Present** near south gate | ☐Yes ☒No | | |
| **Overgrown Vegetation** | ☐Yes ☒No | | |
| **Flow Impediment(s)** | ☐Yes ☒No | | |
| **Deteriorating Walls or Bottom** | ☐Yes ☒No | | |
| **Signs of Overflow** | ☐Yes ☒No | | |
| **Sediment/Erosion Control** | | ☒Yes ☐No | |
| **Riprap in Poor Condition** | ☐Yes ☒No ☐ N/A | | |
| **Vegetated Areas Not Relatively Free of Erosion** | ☐Yes ☒No ☐ N/A | | |
| **Vegetative Buffers in Poor Condition** | ☐Yes ☒No ☐ N/A | | |
| **Drainage Ways** | | ☒Yes ☐No | |
| **Debris Present** | ☐Yes ☒No | | |
| **Overgrown Vegetation** | ☐Yes ☒No | | |
| **Flow Impediment(s)** | ☐Yes ☒No | | |
| **Additional Comments:** | | | |

**Drainage Area:** 3 **Outfalls:** 003 Middle Creek
**Facilities/Land Use:** Field Maintenance, Gylcol Storage, Rental Car, Long-term Parking, Fed-Ex

| Outfall 003 Conditions | Inspection Results | Comments |
|---|---|---|
| Discharging | ☒Yes ☐No | |
| Conditions | ☐Dry ☒Wet | |
| General Drainage | ☐ N/A | Sediment buildup, fallout from surrounding construction some algae growth |
| Odor | ☐Yes ☒No | |
| Oil Sheen | ☐Yes ☒No | |
| Debris (floating or settled) | ☒Yes ☐No | |
| Foam | ☐Yes ☒No | |
| Color | ☐Yes ☒No | |
| Outfall/Discharge | ☐ N/A | erosion from construction causing sediment buildup |
| Odor | ☐Yes ☒No | |
| Oil Sheen | ☐Yes ☒No | |
| Debris (floating or settled) | ☒Yes ☐No | |
| Foam | ☐Yes ☒No | |
| Color | ☐Yes ☒No | |

| Area/Activity | Inspection Results | Controls Adequate (appropriate, effective, and operating)? | Corrective Action Needed and Notes |
|---|---|---|---|
| Air Cargo – Diesel AST | | ☐Yes ☐No | |
| Leaks/Overflow/Spills | ☐Yes ☐No | | |
| Cracks in Tank | ☐Yes ☐No | | |
| Standing Liquid | ☐Yes ☐No | | |
| Stained Pavement | ☐Yes ☐No | | |
| Deteriorated Pavement Seams | ☐Yes ☐No | | |
| Poor Housekeeping | ☐Yes ☐No | | |
| FedEx Cargo Areas – Gasoline/Diesel AST Trailers | | ☒Yes ☐No | |
| Leaks/Overflow/Spills | ☐Yes ☒No | | |
| Cracks in Tank | ☐Yes ☒No | | |
| Standing Liquid | ☐Yes ☒No | | |
| Stained Pavement | ☐Yes ☒No | | |
| Deteriorated Pavement Seams | ☐Yes ☒No | | |
| Poor Housekeeping | ☐Yes ☒No | | |
| Aircraft Fueling Areas | ☐ N/A | ☒Yes ☐No | Snow/slush from precipitation |
| Leaks/Overflow/Spills | ☐Yes ☒No | | |
| Standing Liquid | ☒Yes ☐No | | |
| Cracks in Mobile Refuelers | ☐Yes ☒No | | |
| Maintenance Problems | ☐Yes ☒No | | |
| Poor Work Practices | ☐Yes ☒No | | |
| Deicing Operations | ☐ N/A | ☒Yes ☐No | Snow/slush |
| Spills/Standing Liquid | ☐Yes ☒No | | |
| Stained Pavement | ☒Yes ☐No | | |
| Deteriorated Pavement Seams | ☐Yes ☒No | | |
| Poor Work Practices | ☐Yes ☒No | | |
| Fluids Not Directed toward Deicing Basin | ☐Yes ☒No | | |
| Glycol Storage Area | | ☒Yes ☐No | |
| Leaks/Overflow/Spills | | | |
| Cracks in tanks/totes | ☐Yes ☒No | | |
| Standing Liquid | ☐Yes ☒No | | |
| Stained Pavement | ☐Yes ☒No | | |

| Area/Activity | Inspection Results | Controls Adequate (appropriate, effective, and operating)? | Corrective Action Needed and Notes |
|---|---|---|---|
| **Deteriorated Pavement Seams** | ☐Yes ☒No | | |
| **Poor Housekeeping** | ☐Yes ☒No | | |
| **Fluids Not Directed toward Deicing Basin** | ☐Yes ☒No<br><br>☐Yes ☐No | | |
| **Rental Car Facility Maintenance Bays** | | | |
| **Maintenance Identified Outside** | | | |
| **Spill Kits Not Available** | | | |
| **Spill Kits Not Properly Stocked** | | | |
| **Rental Car Facility Parking Lot** | ☐ | ☒Yes ☐No | |
| **Debris/Spills Identified** | ☐Yes ☒No | | |
| **Oil Sheen** | ☐Yes ☒No | | |
| **Rental Car Facility Maintenance Bays** | | ☒Yes ☐No | |
| **Maintenance Identified Outside** | ☒Yes ☐No | | |
| **Spill Kits Not Available** | ☐Yes ☒No | | |
| **Spill Kits Not Properly Stocked** | ☐Yes ☒No | | |
| **Rental Car Facility Wash Building** | | ☒Yes ☐No | |
| **Leaks/Spills Identified Outside** | ☐Yes ☒No | | |
| **Standing Liquid Identified Outside** | ☐Yes ☒No | | |
| **Poor Work Practices** | ☐Yes ☒No | | |
| **Rental Car Fuel Dispensing Pumps** | | ☒Yes ☐No | |
| **Leaks/Overflow/Spills** | ☐Yes ☒No | | |
| **Standing Liquid** | ☐Yes ☒No | | |
| **Stained Pavement** | ☐Yes ☒No | | |
| **Deteriorated Pavement Seams** | ☐Yes ☒No | | |
| **Pump Operation Not Secured** | ☐Yes ☒No | | |
| **Maintenance Problems** | ☐Yes ☒No | | |
| **Poor Work Practices** | ☐Yes ☒No | | |
| **Rental Car Facility Fuel Storage AST** | | ☐Yes ☐No | |
| **Leaks/Overflow/Spills** | ☐Yes ☐No | | |
| **Cracks in Tank** | ☐Yes ☐No | | |
| **Standing Liquid** | ☐Yes ☐No | | |
| **Stained Concrete or Soil** | ☐Yes ☐No | | |
| **Deteriorated Concrete Seams** | ☐Yes ☐No | | |
| **Distressed Vegetation** | ☐Yes ☐No | | |
| **Tank Operation Not Secured** | ☐Yes ☐No | | |
| **Poor Housekeeping/Work Practices** | ☐Yes ☐No | | |
| **Oil or Sheen In Loading/Unloading Secondary Containment** | ☐Yes ☐No | | |
| **Maintenance Facility Vehicle Parking** | | ☐Yes ☐No | |
| **Debris/Spills Identified** | ☐Yes ☒No | | |
| **Oil Sheen** | ☐Yes ☒No | | |
| **Airfield Maintenance Facility** | | ☐Yes ☐No | |
| **Leaks/Spills Identified Outside** | ☐Yes ☒No | | |
| **Compromised Containers** | ☐Yes ☒No | | |
| **Maintenance Identified Outside** | ☐Yes ☒No | | |
| **Product Storage Identified Outside** | ☐Yes ☒No | | |
| **Deposited Debris** | ☐Yes ☒No | | |
| **Poor Housekeeping** | ☐Yes ☒No | | |

| Area/Activity | Inspection Results | Controls Adequate (appropriate, effective, and operating)? | Corrective Action Needed and Notes |
|---|---|---|---|
| **Maintenance Facility Fuel Dispensing Pumps** | | ☒Yes ☐No | Spill Kits stocked |
| **Leaks/Overflow/Spills** | ☐Yes ☒No | | |
| **Standing Liquid** | ☐Yes ☒No | | |
| **Stained Pavement** | ☐Yes ☒No | | |
| **Deteriorated Pavement Seams** | ☐Yes ☒No | | |
| **Pump Operation Not Secured** | ☐Yes ☒No | | |
| **Maintenance Problems** | ☐Yes ☒No | | |
| **Poor Housekeeping/Work Practices** | ☐Yes ☒No | | |
| | | | |

**Additional Comments:**

Detention basin - manhole covered in dirt

**Drainage Area:** 4 **Outfalls:** 004 and 004A Frink
**Facilities/Land Use:** Other, from fields on western areas, outside gates

| Outfall 004 Conditions | Inspection Results | Comments |
|---|---|---|
| **Discharging** | ☒Yes ☐No | |
| **Conditions** | ☐Dry ☒Wet | |
| **General Drainage** | ☐ N/A | |
| **Odor** | ☐Yes ☒No | |
| **Oil Sheen** | ☐Yes ☒No | |
| **Debris (floating or settled)** | ☐Yes ☒No | |
| **Foam** | ☐Yes ☒No | |
| **Color** | ☐Yes ☒No | |
| **Outfall/Discharge** | ☐ N/A | |
| **Odor** | ☐Yes ☒No | |
| **Oil Sheen** | ☐Yes ☒No | |
| **Debris (floating or settled)** | ☐Yes ☒No | |
| **Foam** | ☐Yes ☒No | |
| **Color** | ☐Yes ☒No | |

| Outfall 004A Conditions | Inspection Results | Comments |
|---|---|---|
| **Discharging** | ☒Yes ☐No | |
| **Conditions** | ☐Dry ☒Wet | |
| **General Drainage** | ☐ N/A | |
| **Odor** | ☐Yes ☒No | |
| **Oil Sheen** | ☐Yes ☒No | |
| **Debris (floating or settled)** | ☐Yes ☒No | |
| **Foam** | ☐Yes ☒No | |
| **Color** | ☐Yes ☒No | |
| **Outfall/Discharge** | ☐ N/A | |
| **Odor** | ☐Yes ☒No | |
| **Oil Sheen** | ☐Yes ☒No | |
| **Debris (floating or settled)** | ☐Yes ☒No | |
| **Foam** | ☐Yes ☒No | |
| **Color** | ☐Yes ☒No | |

| Area/Activity | Inspection Results | Controls Adequate (appropriate, effective, and operating)? | Corrective Action Needed and Notes |
|---|---|---|---|
| **Drainage Way** | | ☐Yes ☐No | |
| **Debris Present** | ☐Yes ☐No | | |
| **Overgrown Vegetation** | ☐Yes ☐No | | |
| **Flow Impediment(s)** | ☐Yes ☐No | | |
| **Sediment/Erosion Control** | | ☐Yes ☐No | |
| **Riprap in Poor Condition** | ☐Yes ☐No ☐ N/A | | |
| **Vegetated Areas Not Relatively Free of Erosion** | ☐Yes ☐No ☐ N/A | | |
| **Vegetative Buffers in Poor Condition** | ☐Yes ☐No ☐ N/A | | |
| **Additional Comments:** | | | |

# Appendix F

## Inspection Forms

# Storm Water Annual Facility Inspection

| General Information | | | |
|---|---|---|---|
| **Facility Name** | Des Moines Airport Authority | | |
| **Facility Physical Address** | 5800 Fleur Drive<br>Des Moines, IA 50321 | | |
| **Permit No.** | 77-27-0-08 | | |
| **Date of Inspection** | | **Start/End Time** | |
| **Lead Inspector Name and Title** | | | |
| **Additional Inspector(s) Name and Title(s)** | | | |
| **Contact Person and Title** | | | |
| **Contact Phone/Email** | | | |

| Weather Information |
|---|
| **Weather at time of this inspection?**<br>❑ Clear ❑Cloudy ❑ Rain ❑ Sleet ❑ Fog ❑ Snow ❑ High Winds<br>❑ Other: Temperature: |

| Discharge Information |
|---|
| **Have any previously unidentified discharges of pollutants occurred since the last inspection?** ❑Yes ❑No<br>**If yes, describe:** |
| **Are there any discharges occurring at the time of inspection?** ❑Yes ❑No<br>**If yes, describe:** |

**CERTIFICATION STATEMENTS**

**Inspector Certification:** completed by the person who conducted the site inspection prior to submitting this form to the person with signature authority in accordance with Permit No. 77-27-0-08, Part VI.E.

"I certify that this report is true, accurate, and complete, to the best of my knowledge and belief."

**Print name and title:** _____

**Signature:** _____**Date:**_____

**Permittee Certification:** person with signature authority in accordance with Permit No. 77-27-0-08, Part VI.E.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

**Print name and title:** _____

**Signature:** _____**Date:**_____

**Non-Compliance**

Describe any incidents of non-compliance observed and not described above:

**Additional Control Measures**

Describe any additional control measures needed to comply with the permit requirements:

**Notes**

Use this space for any additional notes or observations from the inspection:

**Drainage Area:** 1 **Outfall:** 001 Fleur Drive, Yeader Creek
**Facilities/Land Use:** Passenger Terminal, Short- and Long-term Parking, Air Cargo Building

| Outfall Conditions | Inspection Results | Comments |
|---|---|---|
| **Discharging** | ❑Yes ❑No | |
| **Conditions** | ❑Dry ❑Wet | |
| **General Drainage** | ❑ N/A | |
| **Odor** | ❑Yes ❑No | |
| **Oil Sheen** | ❑Yes ❑No | |
| **Debris (floating or settled)** | ❑Yes ❑No | |
| **Foam** | ❑Yes ❑No | |
| **Color** | ❑Yes ❑No | |
| **Outfall/Discharge** | ❑ N/A | |
| **Odor** | ❑Yes ❑No | |
| **Oil Sheen** | ❑Yes ❑No | |
| **Debris (floating or settled)** | ❑Yes ❑No | |
| **Foam** | ❑Yes ❑No | |
| **Color** | ❑Yes ❑No | |

| Area/Activity | Inspection Results | Controls Adequate (appropriate, effective, and operating)? | Comments and/or Corrective Action Needed |
|---|---|---|---|
| **Short and Long-Term Vehicle Parking** | | ❑Yes ❑No | |
| **Debris/Spills Identified** | ❑Yes ❑No | | |
| **Oil Sheen** | ❑Yes ❑No | | |
| **Terminal Blg Solid Waste Disposal** | | ❑Yes ❑No | |
| **Debris** | ❑Yes ❑No | | |
| **Lids Not in Closed Position** | ❑Yes ❑No | | |
| **Poor Housekeeping** | ❑Yes ❑No | | |
| **Storm Water Detention Basin** | | ❑Yes ❑No | |
| **Debris Present** | ❑Yes ❑No | | |
| **Overgrown Vegetation** | ❑Yes ❑No | | |
| **Flow Impediment(s)** | ❑Yes ❑No | | |
| **Deteriorating Walls or Bottom** | ❑Yes ❑No | | |
| **Signs of Overflow** | ❑Yes ❑No | | |
| **Sediment/Erosion Control** | | ❑Yes ❑No | |
| **Riprap in Poor Condition** | ❑Yes ❑No ❑ N/A | | |
| **Vegetated Areas Not Relatively Free of Erosion** | ❑Yes ❑No ❑ N/A | | |
| **Vegetative Buffers in Poor Condition** | ❑Yes ❑No ❑ N/A | | |
| **Additional Comments:** | | | |

**Drainage Area:** 2 **Outfall:** 002 Frink Creek
**Facilities/Land Use:** Runway/Taxi/Apron, ANG, Signature, Fly DSM, De-icing Apron, Cargo, Fed-Ex, Farm fields located outside the gate

| Outfall Conditions | Inspection Results | Comments |
|---|---|---|
| **Discharging** | ❑Yes ❑No | |
| **Conditions** | ❑Dry ❑Wet | |
| **General Drainage** | ❑ N/A | |
| **Odor** | ❑Yes ❑No | |
| **Oil Sheen** | ❑Yes ❑No | |
| **Debris (floating or settled)** | ❑Yes ❑No | |
| **Foam** | ❑Yes ❑No | |
| **Color** | ❑Yes ❑No | |
| **Outfall/Discharge** | ❑ N/A | |
| **Odor** | ❑Yes ❑No | |
| **Oil Sheen** | ❑Yes ❑No | |
| **Debris (floating or settled)** | ❑Yes ❑No | |
| **Foam** | ❑Yes ❑No | |
| **Color** | ❑Yes ❑No | |

| Area/Activity | Inspection Results | Controls Adequate (appropriate, effective, and operating)? | Corrective Action Needed and Notes |
|---|---|---|---|
| **Deicing Operations** | ❑ N/A | ❑Yes ❑No | |
| **Spills/Standing Liquid** | ❑Yes ❑No | | |
| **Stained Pavement** | ❑Yes ❑No | | |
| **Deteriorated Pavement Seams** | ❑Yes ❑No | | |
| **Poor Work Practices** | ❑Yes ❑No | | |
| **Fluids Not Directed toward Deicing Basin** | ❑Yes ❑No | | |
| **Aircraft Fueling Areas** | ❑ N/A | ❑Yes ❑No | |
| **Leaks/Overflow/Spills** | ❑Yes ❑No | | |
| **Standing Liquid** | ❑Yes ❑No | | |
| **Cracks in Mobile Refuelers** | ❑Yes ❑No | | |
| **Maintenance Problems** | ❑Yes ❑No | | |
| **Poor Work Practices** | ❑Yes ❑No | | |
| **Fuel Farm** | | ❑Yes ❑No | |
| **Leaks/Overflow/Spills** | ❑Yes ❑No | | |
| **Cracks in tanks** | ❑Yes ❑No | | |
| **Standing Liquid** | ❑Yes ❑No | | |
| **Stained Concrete or Soil** | ❑Yes ❑No | | |
| **Deteriorated Concrete Seams** | ❑Yes ❑No | | |
| **Distressed Vegetation** | ❑Yes ❑No | | |
| **Tank Operation Not Secured** | ❑Yes ❑No | | |
| **Poor Housekeeping/Work Practices** | ❑Yes ❑No | | |
| **Oil or Sheen In Loading/Unloading Secondary Containment** | ❑Yes ❑No | | |
| **Maintenance Facility Vehicle Parking** | | ❑Yes ❑No | |
| **Debris/Spills Identified** | ❑Yes ❑No | | |
| **Oil Sheen** | ❑Yes ❑No | | |
| | | | |

| Area/Activity | Inspection Results | Controls Adequate (appropriate, effective, and operating)? | Corrective Action Needed and Notes |
|---|---|---|---|
| **Storm Water Detention Basin** | | ❑Yes ❑No | |
| **Debris Present** | ❑Yes ❑No | | |
| **Overgrown Vegetation** | ❑Yes ❑No | | |
| **Flow Impediment(s)** | ❑Yes ❑No | | |
| **Deteriorating Walls or Bottom** | ❑Yes ❑No | | |
| **Signs of Overflow** | ❑Yes ❑No | | |
| **Sediment/Erosion Control** | | ❑Yes ❑No | |
| **Riprap in Poor Condition** | ❑Yes ❑No ❑ N/A | | |
| **Vegetated Areas Not Relatively Free of Erosion** | ❑Yes ❑No ❑ N/A | | |
| **Vegetative Buffers in Poor Condition** | ❑Yes ❑No ❑ N/A | | |
| **Drainage Ways** | | ❑Yes ❑No | |
| **Debris Present** | ❑Yes ❑No | | |
| **Overgrown Vegetation** | ❑Yes ❑No | | |
| **Flow Impediment(s)** | ❑Yes ❑No | | |
| **Additional Comments:** | | | |

**Drainage Area:** 3 **Outfalls:** 003 Middle Creek
**Facilities/Land Use:** Field Maintenance, Gylcol Storage, Rental Car, Long-term Parking, Fed-Ex

| Outfall 003 Conditions | Inspection Results | Comments |
|---|---|---|
| **Discharging** | ❑Yes ❑No | |
| **Conditions** | ❑Dry ❑Wet | |
| **General Drainage** | ❑ N/A | |
| **Odor** | ❑Yes ❑No | |
| **Oil Sheen** | ❑Yes ❑No | |
| **Debris (floating or settled)** | ❑Yes ❑No | |
| **Foam** | ❑Yes ❑No | |
| **Color** | ❑Yes ❑No | |
| **Outfall/Discharge** | ❑ N/A | |
| **Odor** | ❑Yes ❑No | |
| **Oil Sheen** | ❑Yes ❑No | |
| **Debris (floating or settled)** | ❑Yes ❑No | |
| **Foam** | ❑Yes ❑No | |
| **Color** | ❑Yes ❑No | |

| Area/Activity | Inspection Results | Controls Adequate (appropriate, effective, and operating)? | Corrective Action Needed and Notes |
|---|---|---|---|
| **Air Cargo – Diesel AST** | | ❑Yes ❑No | |
| **Leaks/Overflow/Spills** | ❑Yes ❑No | | |
| **Cracks in Tank** | ❑Yes ❑No | | |
| **Standing Liquid** | ❑Yes ❑No | | |
| **Stained Pavement** | ❑Yes ❑No | | |
| **Deteriorated Pavement Seams** | ❑Yes ❑No | | |
| **Poor Housekeeping** | ❑Yes ❑No | | |
| **FedEx Cargo Areas – Gasoline/Diesel AST Trailers** | | ❑Yes ❑No | |
| **Leaks/Overflow/Spills** | ❑Yes ❑No | | |
| **Cracks in Tank** | ❑Yes ❑No | | |
| **Standing Liquid** | ❑Yes ❑No | | |
| **Stained Pavement** | ❑Yes ❑No | | |
| **Deteriorated Pavement Seams** | ❑Yes ❑No | | |
| **Poor Housekeeping** | ❑Yes ❑No | | |
| **Aircraft Fueling Areas** | ❑ N/A | ❑Yes ❑No | |
| **Leaks/Overflow/Spills** | ❑Yes ❑No | | |
| **Standing Liquid** | ❑Yes ❑No | | |
| **Cracks in Mobile Refuelers** | ❑Yes ❑No | | |
| **Maintenance Problems** | ❑Yes ❑No | | |
| **Poor Work Practices** | ❑Yes ❑No | | |
| **Deicing Operations** | ❑ N/A | ❑Yes ❑No | |
| **Spills/Standing Liquid** | ❑Yes ❑No | | |
| **Stained Pavement** | ❑Yes ❑No | | |
| **Deteriorated Pavement Seams** | ❑Yes ❑No | | |
| **Poor Work Practices** | ❑Yes ❑No | | |
| **Fluids Not Directed toward Deicing Basin** | ❑Yes ❑No | | |
| **Glycol Storage Area** | | ❑Yes ❑No | |
| **Leaks/Overflow/Spills** | | | |
| **Cracks in tanks/totes** | ❑Yes ❑No | | |
| **Standing Liquid** | ❑Yes ❑No | | |
| **Stained Pavement** | ❑Yes ❑No | | |

| Area/Activity | Inspection Results | Controls Adequate (appropriate, effective, and operating)? | Corrective Action Needed and Notes |
|---|---|---|---|
| **Deteriorated Pavement Seams** | ❑Yes ❑No | | |
| **Poor Housekeeping** | ❑Yes ❑No | | |
| **Fluids Not Directed toward Deicing Basin** | ❑Yes ❑No | | |
| | ❑Yes ❑No | | |
| **Rental Car Facility Maintenance Bays** | | | |
| **Maintenance Identified Outside** | | | |
| **Spill Kits Not Available** | | | |
| **Spill Kits Not Properly Stocked** | | | |
| **Rental Car Facility Parking Lot** | ❑ | ❑Yes ❑No | |
| **Debris/Spills Identified** | ❑Yes ❑No | | |
| **Oil Sheen** | ❑Yes ❑No | | |
| **Rental Car Facility Maintenance Bays** | | ❑Yes ❑No | |
| **Maintenance Identified Outside** | ❑Yes ❑No | | |
| **Spill Kits Not Available** | ❑Yes ❑No | | |
| **Spill Kits Not Properly Stocked** | ❑Yes ❑No | | |
| **Rental Car Facility Wash Building** | | ❑Yes ❑No | |
| **Leaks/Spills Identified Outside** | ❑Yes ❑No | | |
| **Standing Liquid Identified Outside** | ❑Yes ❑No | | |
| **Poor Work Practices** | ❑Yes ❑No | | |
| **Rental Car Fuel Dispensing Pumps** | | ❑Yes ❑No | |
| **Leaks/Overflow/Spills** | ❑Yes ❑No | | |
| **Standing Liquid** | ❑Yes ❑No | | |
| **Stained Pavement** | ❑Yes ❑No | | |
| **Deteriorated Pavement Seams** | ❑Yes ❑No | | |
| **Pump Operation Not Secured** | ❑Yes ❑No | | |
| **Maintenance Problems** | ❑Yes ❑No | | |
| **Poor Work Practices** | ❑Yes ❑No | | |
| **Rental Car Facility Fuel Storage AST** | | ❑Yes ❑No | |
| **Leaks/Overflow/Spills** | ❑Yes ❑No | | |
| **Cracks in Tank** | ❑Yes ❑No | | |
| **Standing Liquid** | ❑Yes ❑No | | |
| **Stained Concrete or Soil** | ❑Yes ❑No | | |
| **Deteriorated Concrete Seams** | ❑Yes ❑No | | |
| **Distressed Vegetation** | ❑Yes ❑No | | |
| **Tank Operation Not Secured** | ❑Yes ❑No | | |
| **Poor Housekeeping/Work Practices** | ❑Yes ❑No | | |
| **Oil or Sheen In Loading/Unloading Secondary Containment** | ❑Yes ❑No | | |
| **Maintenance Facility Vehicle Parking** | | ❑Yes ❑No | |
| **Debris/Spills Identified** | ❑Yes ❑No | | |
| **Oil Sheen** | ❑Yes ❑No | | |
| **Airfield Maintenance Facility** | | ❑Yes ❑No | |
| **Leaks/Spills Identified Outside** | ❑Yes ❑No | | |
| **Compromised Containers** | ❑Yes ❑No | | |
| **Maintenance Identified Outside** | ❑Yes ❑No | | |
| **Product Storage Identified Outside** | ❑Yes ❑No | | |
| **Deposited Debris** | ❑Yes ❑No | | |
| **Poor Housekeeping** | ❑Yes ❑No | | |

| Area/Activity | Inspection Results | Controls Adequate (appropriate, effective, and operating)? | Corrective Action Needed and Notes |
|---|---|---|---|
| **Maintenance Facility Fuel Dispensing Pumps** | | ❑Yes ❑No | |
| **Leaks/Overflow/Spills** | ❑Yes ❑No | | |
| **Standing Liquid** | ❑Yes ❑No | | |
| **Stained Pavement** | ❑Yes ❑No | | |
| **Deteriorated Pavement Seams** | ❑Yes ❑No | | |
| **Pump Operation Not Secured** | ❑Yes ❑No | | |
| **Maintenance Problems** | ❑Yes ❑No | | |
| **Poor Housekeeping/Work Practices** | ❑Yes ❑No | | |
| | | | |
| **Additional Comments:** | | | |

**Drainage Area:** 4 **Outfalls:** 004 and 004A
**Facilities/Land Use:** Other

| Outfall 004 Conditions | Inspection Results | Comments |
|---|---|---|
| **Discharging** | ❑Yes ❑No | |
| **Conditions** | ❑Dry ❑Wet | |
| **General Drainage** | ❑ N/A | |
| **Odor** | ❑Yes ❑No | |
| **Oil Sheen** | ❑Yes ❑No | |
| **Debris (floating or settled)** | ❑Yes ❑No | |
| **Foam** | ❑Yes ❑No | |
| **Color** | ❑Yes ❑No | |
| **Outfall/Discharge** | ❑ N/A | |
| **Odor** | ❑Yes ❑No | |
| **Oil Sheen** | ❑Yes ❑No | |
| **Debris (floating or settled)** | ❑Yes ❑No | |
| **Foam** | ❑Yes ❑No | |
| **Color** | ❑Yes ❑No | |

| Outfall 004A Conditions | Inspection Results | Comments |
|---|---|---|
| **Discharging** | ❑Yes ❑No | |
| **Conditions** | ❑Dry ❑Wet | |
| **General Drainage** | ❑ N/A | |
| **Odor** | ❑Yes ❑No | |
| **Oil Sheen** | ❑Yes ❑No | |
| **Debris (floating or settled)** | ❑Yes ❑No | |
| **Foam** | ❑Yes ❑No | |
| **Color** | ❑Yes ❑No | |
| **Outfall/Discharge** | ❑ N/A | |
| **Odor** | ❑Yes ❑No | |
| **Oil Sheen** | ❑Yes ❑No | |
| **Debris (floating or settled)** | ❑Yes ❑No | |
| **Foam** | ❑Yes ❑No | |
| **Color** | ❑Yes ❑No | |

| Area/Activity | Inspection Results | Controls Adequate (appropriate, effective, and operating)? | Corrective Action Needed and Notes |
|---|---|---|---|
| **Drainage Way** | | ❑Yes ❑No | |
| **Debris Present** | ❑Yes ❑No | | |
| **Overgrown Vegetation** | ❑Yes ❑No | | |
| **Flow Impediment(s)** | ❑Yes ❑No | | |
| **Sediment/Erosion Control** | | ❑Yes ❑No | |
| **Riprap in Poor Condition** | ❑Yes ❑No ❑ N/A | | |
| **Vegetated Areas Not Relatively Free of Erosion** | ❑Yes ❑No ❑ N/A | | |
| **Vegetative Buffers in Poor Condition** | ❑Yes ❑No ❑ N/A | | |
| **Additional Comments:** | | | |

# Storm Water Monthly Facility Inspection

| General Information | | | |
|---|---|---|---|
| **Facility Name** | The Des Moines Airport Authority | | |
| **Facility Physical Address** | 5800 Fleur Drive<br>Des Moines, IA 50312 | | |
| **Permit No.** | 77-27-0-08 | | |
| **Date of Inspection** | | **Start/End Time** | |
| **Lead Inspector Name and Title** | | | |
| **Additional Inspector(s) Name and Title(s)** | | | |
| **Contact Person and Title** | | | |
| **Contact Phone/Email** | | | |

**Weather Information**

**Weather at time of this inspection?**
❑ Clear ❑Cloudy ❑ Rain ❑ Sleet ❑ Fog ❑ Snow ❑ High Winds
❑ Other: Temperature:

**Discharge Information**

**Have any previously unidentified discharges of pollutants occurred since the last inspection?** ❑Yes ❑No
**If yes, describe:**

**Are there any discharges occurring at the time of inspection?** ❑Yes ❑No
**If yes, describe:**

**Certification Statement**

**Inspector Certification:** completed by the person who conducted the site inspection.

"I certify that this report is true, accurate, and complete, to the best of my knowledge and belief."

**Print name and title:** _____

**Signature:** _____**Date:**_____

**Non-Compliance**

Describe any incidents of non-compliance observed and not described above:

**Additional Control Measures**

Describe any additional control measures needed to comply with the permit requirements:

**Notes**

Use this space for any additional notes or observations from the inspection:

**Drainage Area:** 1 **Outfall:** 001 Yeader Creek
**Facilities/Land Use:** Passenger Terminal, Short- and Long-term Parking, Pond, Deicer storage, Concourses

| Outfall 001 Conditions | Inspection Results | Comments |
|---|---|---|
| **Discharging** | ❑Yes ❑No | |
| **Conditions** | ❑Dry ❑Wet | |
| **General Drainage** | ❑ N/A | |
| **Odor** | ❑Yes ❑No | |
| **Oil Sheen** | ❑Yes ❑No | |
| **Debris (floating or settled)** | ❑Yes ❑No | |
| **Foam** | ❑Yes ❑No | |
| **Color** | ❑Yes ❑No | |
| **Outfall/Discharge** | ❑ N/A | |
| **Odor** | ❑Yes ❑No | |
| **Oil Sheen** | ❑Yes ❑No | |
| **Debris (floating or settled)** | ❑Yes ❑No | |
| **Foam** | ❑Yes ❑No | |
| **Color** | ❑Yes ❑No | |

**Additional Comments:**

**Drainage Area:** 2 **Outfall:** 002 Frink Creek
**Facilities/Land Use:** Runways, Maintenance Facility, Airfield Maintenance Fuel Dispensers, Tenant storage, Salt Storage, Vegetated Areas, and Cultivated Farmland.

| Outfall 002 Conditions | Inspection Results | Comments |
|---|---|---|
| **Discharging** | ❑Yes ❑No | |
| **Conditions** | ❑Dry ❑Wet | |
| **General Drainage** | ❑ N/A | |
| **Odor** | ❑Yes ❑No | |
| **Oil Sheen** | ❑Yes ❑No | |
| **Debris (floating or settled)** | ❑Yes ❑No | |
| **Foam** | ❑Yes ❑No | |
| **Color** | ❑Yes ❑No | |
| **Outfall/Discharge** | ❑ N/A | |
| **Odor** | ❑Yes ❑No | |
| **Oil Sheen** | ❑Yes ❑No | |
| **Debris (floating or settled)** | ❑Yes ❑No | |
| **Foam** | ❑Yes ❑No | |
| **Color** | ❑Yes ❑No | |

**Additional Comments:**

**Drainage Area:** 3 **Outfall:** 003 Middle Creek
**Facilities/Land Use:** Rental Car Facility, Facilities Management, Cargo Apron, Long-term parking

| Outfall 003 Conditions | Inspection Results | Comments |
|---|---|---|
| **Discharging** | ❑Yes ❑No | |
| **Conditions** | ❑Dry ❑Wet | |
| **General Drainage** | ❑ N/A | |
| **Odor** | ❑Yes ❑No | |
| **Oil Sheen** | ❑Yes ❑No | |
| **Debris (floating or settled)** | ❑Yes ❑No | |
| **Foam** | ❑Yes ❑No | |
| **Color** | ❑Yes ❑No | |
| **Outfall/Discharge** | ❑ N/A | |
| **Odor** | ❑Yes ❑No | |
| **Oil Sheen** | ❑Yes ❑No | |
| **Debris (floating or settled)** | ❑Yes ❑No | |
| **Foam** | ❑Yes ❑No | |
| **Color** | ❑Yes ❑No | |

**Additional Comments:**

**Drainage Area:** 4 **Outfall:** 004
**Facilities/Land Use:** Iowa Air National Guard campus

| Outfall 4 Conditions | Inspection Results | Comments |
|---|---|---|
| **Discharging** | ❑Yes ❑No | |
| **Conditions** | ❑Dry ❑Wet | |
| **General Drainage** | ❑ N/A | |
| **Odor** | ❑Yes ❑No | |
| **Oil Sheen** | ❑Yes ❑No | |
| **Debris (floating or settled)** | ❑Yes ❑No | |
| **Foam** | ❑Yes ❑No | |
| **Color** | ❑Yes ❑No | |
| **Outfall/Discharge** | ❑ N/A | |
| **Odor** | ❑Yes ❑No | |
| **Oil Sheen** | ❑Yes ❑No | |
| **Debris (floating or settled)** | ❑Yes ❑No | |
| **Foam** | ❑Yes ❑No | |
| **Color** | ❑Yes ❑No | |

| **Additional Comments:** |
|---|
| |

# Appendix G

## Incident Report Forms

April 3, 2019

Mr. Tom Atkinson
Iowa Dept. of Natural
Resources 401 SW 7th Street.
Des Moines, IA 50309

Re: Unanticipated overage of limitations, IA NPDES Permit #: 77-27-0-08
Month of February, 2019

Dear Mr. Atkinson:

The following is in response to Part IV, page 11 of our permit number indicated above.

On the following dates, samples taken and tested from Yeader Creek #1, outfall 001 (crossing of Yeader Creek at Fleur Drive) reported as follows:

| | Date | Item | Reading | Max |
|---|---|---|---|---|
| A. | 2/6/19 | CBOD - Daily | 246 mg/l | 150 mg/l |
| B. | 2/19/19 | CBOD - Daily | 154 mg/l | 150 mg/l |
| C. | 2/26/19 | CBOD - Daily | 312 mg/l | 150 mg/l |
| D. | | CBOD - Monthly | 167 mg/l | 100 mg/l |

After the samples were taken, a quick COD was reported by the testing agency. Both parties were in communications to figure out what was causing this. Normally there is a relationship to the COD and the CBOD. With the COD being higher than normal, the Airport investigated all areas and items that could be affecting the results.

1. Aircraft deicing operations: all aircraft were deicing within "blue" lines on our apron as observed by Airport Operations, except on following date.
    - 2/18/19 – Gate C4
        - Operations was notified by Tenant that deicing fluid being applied to Aircraft was crossing the blue line. Due to winter operations taking place, snow accumulated on the pavement and caused the fluid to build up, which in turn went over the blue line and outside our containment area.
        - See attached report.
    - 2/24/19 – gate C2
        - The operator of the deicing equipment noticed that fluid was being blown past the blue line due to high winds occurring.

        - See attached report.
    - Operations discussed with each tenant on the importance of maintaining the deicing fluid within our containment area.
2. Fixed Based Operators: all of their deicing took place within the “blue” lines areas.
3. Valves/Gate Weirs on the system: all were inspected manually to make sure they were closed securely, and that no leakage was bypassing the gate valves. Airport staff inspected sump pumps placed behind the gate valves just in case there is leakage past them. The sump pumps take the leakage and pump it back onto the uphill/infeed side of the gate valve or into the holding tank. The Airport has placed these sumps on our Building Automation System so that we can track if/when they run. Most notably when they do not run so that we can inspect them prior to an issue occurring. All items were functioning as they should.
4. Snow removal operations: field maintenance staff were brought into discussions about where snow from the Aprons is pushed and deposited. All methods were being followed.

The Airport could not determine why the results were high for the Propylene and CBOD. One item that is being investigated is the “drippage” of deicing fluid off the Aircraft as it taxi’s out to the runway. As the aircraft starts to move/take off, shear forces applied to the wings causes the fluid to be forced off the Aircraft. Once on the taxiways and runways, the intakes in these areas are outside our containment area.

If you should have any questions, please feel free to call, 515-256-5160.

Sincerely,

Bryan Belt
Director of Engineering & Planning

cc: Alan Whitlatch, Facilities Manager

Attachments: Spill reports dated 2/18 & 2/24

# Airport Operations

Log Entered 2/18/2019 8:51 AM Entered By Nick Everhart

Event Date/Time 2/18/2019 8:50 AM

## HAZMAT SPILL

**Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms**

| | | | |
|---|---|---|---|
| **Incident Time:** | 2/18/2019 08:50 | **Location:** | C4 |
| **Material Released:** | Glycol Deicing Fluid | **Amount (gallons):** | 25 |
| **Equipment Involved:** | Deicer 16 | **Cause:** | Human Error |
| **ARFF Response:** | No | **Injuries Reported:** | No |
| **Entered Storm Drain:** | No | **Tenant:** | DGS |
| **Aircraft Involved:** | No | **Tail Number:** | |
| **Responsible Company:** | Other (List Below) | **Cleaned By:** | |
| **Fueler Name:** | | **Fueler Badge #:** | |

**METAR:** KDSM 181354Z 33006KT 10SM FEW180 SCT250 M10/M11 A3036 RMK AO2 SLP298 T11001111

**Summary (required):**

At 08:00 operations was notified by Signature that deicer fluid had been sprayed past the blue line across from Gate C4. Upon review of the footage DGS Deicer truck #16 can be seen deicing an aircraft. Although the aircraft is parked within the containment area the operator over sprayed causing Deicer fluid to go outside of the containment area.

P:\WORKING\2019\OPS\Incidents\Images\02 FEB\2-18 Glycol Spill

**Location (map):**

**ROUTING CHECKLIST**

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 02/18/2019 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | | |

## MAP

## ATTACHMENTS

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 2/24/2019 13:29 PM | Entered By | Nick Everhart |
| Event Date/Time | 2/24/2019 7:15 AM | | |

## HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 2/24/2019 07:15 | Location: | C2 |
| Material Released: | Glycol Deicing Fluid | Amount (gallons): | 25 |
| Equipment Involved: | DGS Deicer | Cause: | Human Error |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | DGS |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | |
| Fueler Name: | | Fueler Badge #: | |

METAR:

KDSM 241320Z 30029G45KT 1SM R31/4500VP6000FT -SN BLSN BR SCT014 SCT020 M11/M13 A3000 RMK AO2 PK WND 31045/1316 TWR VIS 2 PRESRR

Summary (required):

At 07:15 DGS Deicer truck #580519 deiced a CRJ 900 that had pushed off of Gate C2. The operator over sprayed and approximately 25 gallons of deicer fell past the blue containment line. The winds at the time of incident were gusting to 45 knots.

Video will be added on 2/25/19

Location (map):

### ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 02/24/2019 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | | |

MAP

April 16, 2019

Mr. Tom Atkinson
Iowa Dept. of Natural Resources
401 SW 7th Street.
Des Moines, IA 50309

Re: Unanticipated overage of limitations, IA NPDES Permit #: 77-27-0-08
Month of March 2019

Dear Mr. Atkinson:

The following is in response to Part IV, page 11 of our permit number indicated above.

On the following dates, samples taken and tested from Yeader Creek #1, outfall 001 (crossing of Yeader Creek at Fleur Drive) reported as follows:

| | Date | Item | Reading | Max |
|---|---|---|---|---|
| A. | 03/11/19 | Propylene – Daily | 201 mg/l | 150 mg/l |
| B. | 03/15/19 | Propylene – Daily | 293 mg/l | 150 mg/l |
| C. | 03/19/19 | Propylene – Daily | 154 mg/l | 150 mg/l |
| D. | 03/21/19 | Propylene – Daily | 157 mg/l | 150 mg/l |
| E. | 03/15/19 | CBOD – Daily | 673 mg/l | 150 mg/l |
| F. | 03/19/19 | CBOD – Daily | 582 mg/l | 150 mg/l |
| G. | 03/27/19 | CBOD – Daily | 209 mg/l | 150 mg/l |
| H. | | CBOD – Monthly | 409.5 mg/l | 100 mg/l |

The Des Moines Airport Authority has not yet determined why the results above were high for the Propylene and CBOD. One item that is currently being looked at is where the contaminated snow from the aprons is pushed and deposited. There is a possibility that our operators may have blown contaminated snow past our berms and outside the containment area on extremely windy days. Also, the Des Moines Airport Authority is actively looking into any correlations with the rising temperature(s).

The Des Moines Airport Authority is in the process of creating an "Annual Refresher Training Program" for the field maintenance staff and operators. This training will provide overviews of the regulations pertaining to management of stormwater impacted by deicing and snow removal operations.



Des Moines International Airport, 5800 Fleur Drive, Suite 207, Des Moines, Iowa 50321

The third item currently under investigation is the “drippage” of deicing fluid shedding off the aircrafts as it taxis out to runway outside the containment area. We are compiling data to see if there are any correlation between the number of aircrafts taking off from runway 23 vs the Propylene and CBOD levels in Yeader Creek.

Our team is doing our due diligence to investigate this issue and actively looking for an explanation on the elevated and abnormal Propylene and CBOD readings. If you should have any questions, please feel free to call at 515-256-5858.

Sincerely,

Cole Steffes

Cole Steffes
Engineering & Planning Department

cc: Alan Whitlatch, Facilities Manager
Damon Quick, Chief Building Engineer
Bryan Belt, Director of Engineering & Planning

May16, 2019

Mr. Tom Atkinson
Iowa Dept. of Natural Resources 401
SW 7th Street.
Des Moines, IA 50309

Re: Unanticipated overage of limitations, IA NPDES Permit #: 77-27-0-08 Month of April 2019

Dear Mr. Atkinson:

The following is in response to Part IV, page 11 of our permit number indicated above.

On the following date, samples taken and tested from Yeader Creek #1, outfall 001 (crossing of Yeader Creek at Fleur Drive) reported as follows:

| | Date | Item | Reading | Max |
|---|---|---|---|---|
| A. | 04/05/19 | CBOD – Daily | 194 mg/l | 150 mg/l |
| B. | | CBOD – Monthly | 102 mg/l | 100 mg/l |

The Des Moines Airport Authority has not yet determined why the results above were high for CBOD. The Airport is currently investigating all areas and items that could be affecting the results. Please see the two comments from the investigation that is underway:

1. From the compiled data between the number of aircrafts taking off from runway 23 vs the CBOD levels in Yeader Creek, the airport did not see any correlation with the "drippage" of deicing fluid shedding off the aircrafts as it is taxiing out to the runway outside the containment area.

2. The airport is currently looking at where the contaminated snow from the aprons is pushed and deposited. It is possible that contaminated snow could have been blown past our berms and outside the containment area on extremely windy days. This item is currently being discussed with our field maintenance staff and operators.

Our team is still doing our due diligence to investigate this issue and actively looking for an explanation on the elevated CBOD readings. If you should have any questions, please feel free to call at 515-256-5858.

Sincerely,

Cole Steffes

Cole Steffes
Engineering & Planning Department

May 20, 2019

Tom Atkinson
Iowa Department of Natural Resources
401 SW 7th Street.
Des Moines, IA 50309

Re: Unanticipated Bypass of Treatment, IA NPDES Permit #: 77-27-0-08

Dear Mr. Atkinson:

The following is in response to Section M, paragraph 2, page 20 of our permit number indicated above. Oral notification of the bypass was presented via phone on May 17, 2019 at 3:43 PM with Andrew Bigger. Following is the written submission notification that the Airport went into an unanticipated bypass of the facility on Friday May 17, 2019 at 7:00 AM.

Airport determined that the bypass of the systems started to occur at the South Detention Tanks (South Cargo Apron). This occurred at approximately 7:00 AM on Friday May 17, 2019. This bypass leads to Frink Creek, outfall #2.

The reasoning that the bypass developed was due to the Airport receiving an unusual amount of rainfall in a short period of time. From the data received from the National Weather Service, the area received a total of 1.58" on the morning of May 17th.

Airport was discharging at our maximum limits established to Wastewater Reclamation Authority (WRA), 300 gpm at South tanks, however, Airport was just receiving more than we could discharge to treatment.

The results of the sampling will be included in the Airport's MMOR report for the month of May. If you should have any questions, please feel free to call, 515-256-5858.

Sincerely,

Cole Steffes

Cole Steffes
Engineering & Planning Department

[Explanation of the Preliminary Monthly Climate Data (F6) Product]

**These data are preliminary and have not undergone final quality control by the National Climatic Data Center (NCDC). Therefore, these data are subject to revision. Final and certified climate data can be accessed at the NCDC - http://www.ncdc.noaa.gov.**

## WFO Monthly/Daily Climate Data

```
000
CXUS53 KDMX 200920
CF6DSM
PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

                                        STATION:   DES MOINES IA
                                        MONTH:     MAY
                                        YEAR:      2019
                                        LATITUDE:   41 31 N
                                        LONGITUDE:  93 39 W

  TEMPERATURE IN F:        :PCPN:    SNOW:  WIND      :SUNSHINE: SKY     :PK WND
==============================================================================
1   2   3   4   5  6A  6B    7    8   9   10  11  12  13   14  15   16   17  18
                                    12Z  AVG MX 2MIN
DY MAX MIN AVG DEP HDD CDD  WTR  SNW DPTH SPD SPD DIR MIN PSBL S-S WX    SPD DR
==============================================================================

 1  55  45  50  -8  15   0 0.03  0.0    0  5.3 14 360   M    M  10 1      18  10
 2  63  45  54  -4  11   0 0.00  0.0    0  6.8 14 360   M    M   7        19 340
 3  60  42  51  -7  14   0 0.00  0.0    0  5.3 10 140   M    M   5        16 150
 4  69  41  55  -3  10   0 0.00  0.0    0  5.9 13 160   M    M   4        17 190
 5  77  53  65   6   0   0 0.02  0.0    0 10.0 21 210   M    M   8        29 200
 6  68  52  60   1   5   0 0.08  0.0    0 10.3 20  30   M    M   7 1      25  20
 7  61  50  56  -4   9   0    T  0.0    0 12.1 21  20   M    M  10        37 110
 8  69  46  58  -2   7   0 0.61  0.0    0 14.6 29 210   M    M   9 18     40 210
 9  48  38  43 -17  22   0    T  0.0    0 12.4 25 320   M    M  10        33 310
10  64  38  51  -9  14   0 0.00  0.0    0  5.7 16 310   M    M   5        22 310
11  55  45  50 -11  15   0 0.03  0.0    0  7.9 17 150   M    M   9        22 120
12  54  40  47 -14  18   0 0.12  0.0    0  4.5 10  30   M    M   8 1      14 110
13  66  35  51 -10  14   0 0.00  0.0    0  3.7 12 180   M    M   2 12     16 140
14  71  50  61  -1   4   0 0.22  0.0    0  9.2 18 150   M    M   6 1      25 110
15  78  48  63   1   2   0 0.00  0.0    0  5.8 12 120   M    M   2 1      18 100
16  91  62  77  15   0  12 0.51  0.0    0 10.7 25 250   M    M   5 13     34 250
17  82  63  73  10   0   8 1.58  0.0    0 10.4 25  40   M    M   9 13     35 340
18  79  59  69   6   0   4 0.62  0.0    0 11.5 24 230   M    M   9 13     32 260
19  60  47  54  -9  11   0    T  0.0    0 13.2 24 300   M    M   9 1      31 300
==============================================================================
SM 1270  899       171  24  3.82     0.0 165.3          M      134
==============================================================================
AV 66.8 47.3                              8.7 FASTST   M    M   7    MAX(MPH)
                                MISC ---->  # 29 210               # 40  210
==============================================================================
NOTES:
# LAST OF SEVERAL OCCURRENCES

COLUMN 17 PEAK WIND IN M.P.H.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

                                        STATION:  DES MOINES IA
                                        MONTH:    MAY
                                        YEAR:     2019
```

LATITUDE: 41 31 N
LONGITUDE: 93 39 W

[TEMPERATURE DATA]

AVERAGE MONTHLY: 57.1
DPTR FM NORMAL: -3.3
HIGHEST: 91 ON 16
LOWEST: 35 ON 13

[PRECIPITATION DATA]

TOTAL FOR MONTH: 3.82
DPTR FM NORMAL: 0.88
GRTST 24HR 1.58 ON 17-17

SNOW, ICE PELLETS, HAIL
TOTAL MONTH: 0.0 INCH
GRTST 24HR 0.0
GRTST DEPTH: 0

SYMBOLS USED IN COLUMN 16

1 = FOG OR MIST
2 = FOG REDUCING VISIBILITY TO 1/4 MILE OR LESS
3 = THUNDER
4 = ICE PELLETS
5 = HAIL
6 = FREEZING RAIN OR DRIZZLE
7 = DUSTSTORM OR SANDSTORM: VSBY 1/2 MILE OR LESS
8 = SMOKE OR HAZE
9 = BLOWING SNOW
X = TORNADO

[NO. OF DAYS WITH]

MAX 32 OR BELOW: 0
MAX 90 OR ABOVE: 1
MIN 32 OR BELOW: 0
MIN 0 OR BELOW: 0

[WEATHER - DAYS WITH]

0.01 INCH OR MORE: 10
0.10 INCH OR MORE: 6
0.50 INCH OR MORE: 4
1.00 INCH OR MORE: 1

[HDD (BASE 65) ]

TOTAL THIS MO. 171
DPTR FM NORMAL 58
TOTAL FM JUL 1 6693
DPTR FM NORMAL 541

CLEAR (SCALE 0-3) 2
PTCLDY (SCALE 4-7) 9
CLOUDY (SCALE 8-10) 8

[CDD (BASE 65) ]

TOTAL THIS MO. 24
DPTR FM NORMAL -2
TOTAL FM JAN 1 28
DPTR FM NORMAL -12

[PRESSURE DATA]

HIGHEST SLP M ON M
LOWEST SLP 29.49 ON 18

[REMARKS]

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 03/20/2018 08:24 | Entered By | Joke Primrose |
| Event Date/Time | 08/11/2017 07:00 | Days Open | 794 |

HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 08/11/2017 07:00 | Location: | A3 |
| Material Released: | Jet A | Amount (gallons): | 14 |
| Equipment Involved: | aircraft B737-700 | Cause: | Equipment Failure |
| ARFF Response: | Yes | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | Southwest Airlines |
| Aircraft Involved: | Yes | Tail Number: | N765SW |
| Responsible Company: | Signature Flight Support | Cleaned By: | DMAA Maintenance |
| Fueler Name: | | Fueler Badge #: | |
| METAR: | KDSM 111254Z 01008KT 10SM FEW250 18/15 A3010 RMK AO2 SLP186 T01830150 | | |

Summary (required):

At approximately 06:40 on August 11G2 ground crew pushed Southwest Airline flight 947 back from Gate A3. Upon routine engine start, a very small amount of fuel normally discharges from the bottom of the engine cowl. When the crew initiated this engine start, the seals on the left main engine did not seal the flow of fuel off causing the fuel to continue flowing onto the terminal apron. G2 noticed the large amount of fuel flowing from the engine and notified airport operations.

ARFF and DMPD responded. ARFF initiated placement of petroleum spill booms and began application of loose absorbent material.
Field Maintenance was dispatched and aided in loose absorbent material application and clean-up.

Spill area 15' X 90', approximately 14 gallons of Jet A fuel.

Billable work order 115792 issued to Southwest Airlines issued for clean up and Hazardous Waste Disposal.

Video of incident in: P:\WORKING\2017\OPS\Incidents\Images\8-11-17 SWA Fuel Spill

Location (map):

ATTACHMENTS

| | | | |
|---|---|---|---|
| Log Entered | 12/20/2017 20:39 | Entered By | Bill Klees |
| Event Date/Time | 12/20/2017 20:39 | Days Open | 663 |

HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 12/20/2017 16:10 | Location: | |
| Material: | Diesel Fuel | Amount (gallons): | 2 |
| Equipment Involved: | lighted X | Cause: | Equipment Failure |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | |
| Aircraft Involved: | | Tail Number: | |
| Fueling Company: | | Cleaned By: | |
| Fueler Name: | | Fueler Badge #: | |
| METAR: | KDSM 210154Z 13010KT 10SM BKN036 BKN150 OVC230 03/M08 A2993 RMK AO2 SLP143 T00331083 | | |

Summary (required):

I was contacted by Foth that they were done on RWY 5/23 . I notified FM to pick up the Xs. I proceeded to the approach to 5 to check the runway prior to opening. When I arrived I noticed fuel spraying from below the engine. I shut off the fuel and killed the engine. FM towed the X to their shop for repair. FM put 3 bags of absorbent on the spill and cleaned it up

WO for spill 118408

WO for X 118406

Location (map):

| | | | | | |
|---|---|---|---|---|---|
| Log Entered | 12/20/2017 12:18 | Entered By | Nick Everhart | | |
| Event Date/Time | 12/20/2017 09:25 | Close Date | 12/20/2017 15:03 | Days Open | 0 |

HAZMAT SPILL

| | | | | |
|---|---|---|---|---|
| Incident Time: | 12/20/2017 | 09:25 | Location: | |
| Material: | Diesel Fuel | | Amount (gallons): | 1 |
| Equipment Involved: | Lighted X | | Cause: | Equipment Failure |
| ARFF Response: | No | | Injuries Reported: | No |
| Entered Storm Drain: | No | | Tenant: | |
| Aircraft Involved: | No | | Tail Number: | |
| Fueling Company: | | | Cleaned By: | Other (List Below) |
| Fueler Name: | | | Fueler Badge #: | |
| METAR: | KDSM 201754Z 07007KT 10SM FEW100 SCT200 BKN250 03/M12 A3008 RMK AO2 SLP193 T00281122 10028 21022 58021 | | | |

Summary (required):

During an airfield inspection OPS 7 noticed fuel leaking from both lighted X's on RWY 5/23. Absorbent was put under each lighted X. Less than a gallon of fuel leaked from each Lighted X. No fuel made it to the grass and the used absorbent was disposed of properly.

Location (map):

ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 12/20/2017 |

ATTACHMENTS

Fuel Leak

Fuel Leak #2

| | | | | | |
|---|---|---|---|---|---|
| Log Entered | 12/14/2017 16:19 | Entered By | Andrew Wall | | |
| Event Date/Time | 12/14/2017 16:19 | Close Date | 12/14/2017 23:25 | Days Open | 0 |

HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 12/14/2017 15:00 | Location: | |
| Material: | Other (Describe) | Amount (gallons): | 1 |
| Equipment Involved: | Jet Parking Shuttle Bus | Cause: | Equipment Failure |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | Jet Parking |
| Aircraft Involved: | No | Tail Number: | |
| Fueling Company: | | Cleaned By: | Other (List Below) |
| Fueler Name: | | Fueler Badge #: | |
| METAR: | KDSM 142154Z 33004KT 10SM OVC034 00/M07 A3007 RMK AO2 SLP194 T00001072 | | |

Summary (required):

Jet parking shuttle bus was coming to the airport via the south entrance when the drive shaft broke and leaked about 1 gallon of transmission onto the ground. Jet Parking called a tow truck to tow the disabled vehicle. The curb LEO directed traffic because the south entrance was blocked. Ops 7 arrived about 1510 and assisted the driver in moving the bus so that traffic could start coming in the south entrance again. The tow truck arrived shortly after and took the disabled bus away. He did not clean up any of the transmission fluid that leaked onto the road. Two field maintenance workers responded and used two bags of floor dry to clean up the transmission fluid. The spill was cleaned up and the lane fully opened at 1545.

Materials used - 2 bags of floor dry

Personnel - Mike Wieh and Brian Danitz.

Location (map):

ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 12/14/2017 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | | 12/14/2017 |

ATTACHMENTS

Spill

| | | | | | |
|---|---|---|---|---|---|
| Log Entered | 11/28/2017 12:45 | Entered By | Christian Kloster | | |
| Event Date/Time | 11/28/2017 12:45 | Close Date | | Days Open | 685 |

HAZMAT SPILL

| | | | | |
|---|---|---|---|---|
| Incident Time: | 11/28/2017 | 12:45 | Location: | A5 |
| Material: | Hydraulic Fluid | | Amount (gallons): | 3 |
| Equipment Involved: | UA tug | | Cause: | Equipment Failure |
| ARFF Response: | No | | Injuries Reported: | No |
| Entered Storm Drain: | No | | Tenant: | United-DGS |
| Aircraft Involved: | No | | Tail Number: | |
| Fueling Company: | | | Cleaned By: | Other (List Below) |
| Fueler Name: | | | Fueler Badge #: | |
| METAR: | KDSM 281754Z 36017G23KT 10SM FEW060 SCT250 OVC300 13/02 A3001 | | | |

Summary (required):

Found a UA tug at A5 with approx 2 gal of what appears to be hydraulic fluid on the ground underneath. There was an additional spill, which was extracted, by A5 running all the way to A4. I spoke with Dustin Powers at UA-DGS, he reports there was a leak under the tug and it was not noticed until it had driven from A4 to A5. They extracted the spill with quick dry material but he did not know it was still leaking. A maintenance crew arrived and extracted the remaining fluid from underneath the tug. The fluid did not run to any nearby drains, no ARFF response was required and no injuries were reported.

Location (map):

ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 11/28/2017 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | | 11/28/2017 |

ATTACHMENTS

UA spill-1


UA spill-2


UA spill-3


A 4

| | | | | | |
|---|---|---|---|---|---|
| Log Entered | 10/24/2017 05:54 | Entered By | Sara Arnold | | |
| Event Date/Time | 10/24/2017 05:54 | Close Date | | Days Open | 720 |

HAZMAT SPILL

| | | | | |
|---|---|---|---|---|
| Incident Time: | 10/24/2017 | 04:55 | Location: | |
| Material: | Diesel Fuel | | Amount (gallons): | 10 |
| Equipment Involved: | Lighted X | | Cause: | Equipment Failure |
| ARFF Response: | Yes | | Injuries Reported: | No |
| Entered Storm Drain: | No | | Tenant: | DSM Airport Authority |
| Aircraft Involved: | No | | Tail Number: | |
| Fueling Company: | | | Cleaned By: | Other (List Below) |
| Fueler Name: | | | Fueler Badge #: | |
| METAR: | KDSM 241054Z 32020G27KT 10SM OVC032 04/M02 A2990 RMK AO2 SLP126 BINOVC T00441017 PNO | | | |

Summary (required):

The Des Moines Airport owned lighted X on the approach of RWY 5 was found by Von with Traffic Control and Sara Arnold with the Airport Authority to be leaking fuel when the lighted X was being taken down for the night. The estimate size of the area affected was 75 feet by 10 feet. The estimate gallons of fuel is 10. Because this was on the only available RWY and to not delay flights I called ARFF to spray water on the area. The winds were gusting at 27KT so I knew it would dry fast and allow aircraft to depart on time. The aircraft were going to be departing from RWY 5. The Des Moines Airport Authority Field Maintenance found a crack in the fuel tank which caused the fuel to come out onto the RWY. This was something that they were able to fix and the lighted X was back in service. Since this is the airport authorities equipment the airport authority would be responsible for the clean up.

Location (map):

ROUTING CHECKLIST

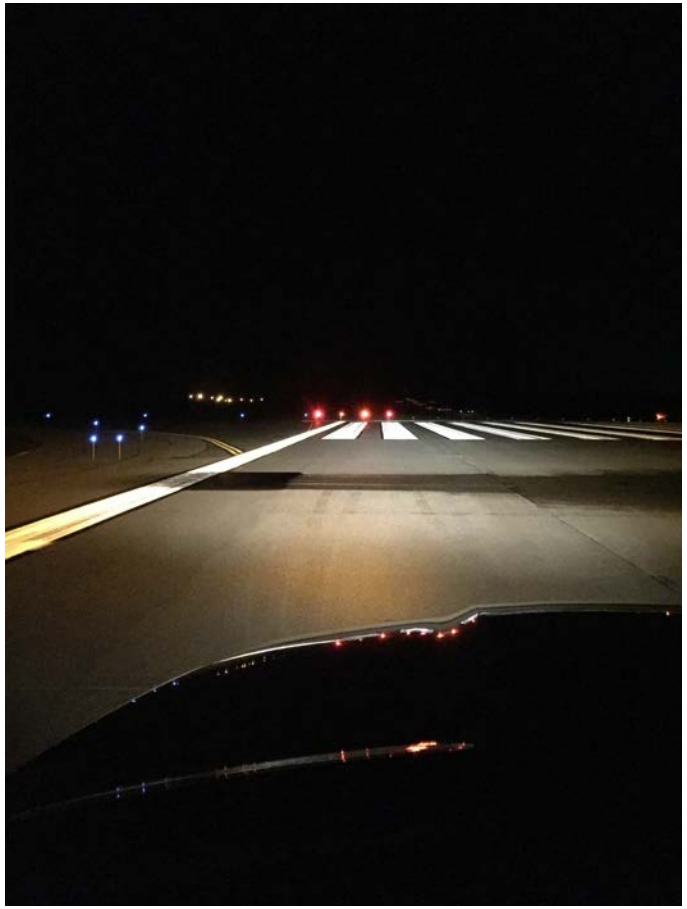
| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | updated | 10/27/2017 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | updated | 10/27/2017 |

MAP


Google
Imagery ©2019 , Maxar Technologies, USDA Farm Service Agency

ATTACHMENTS

IMG_087



img_088

| | | | | | |
|---|---|---|---|---|---|
| Log Entered | 09/25/2017 15:21 | Entered By | Mike Richardson | | |
| Event Date/Time | 09/25/2017 15:20 | Close Date | 09/25/2017 15:21 | Days Open | 0 |

HAZMAT SPILL

| | | | | |
|---|---|---|---|---|
| Incident Time: | 9/25/2017 | 15:20 | Location: | |
| Material: | | | Amount (gallons): | |
| Equipment Involved: | | | Cause: | |
| ARFF Response: | | | Injuries Reported: | |
| Entered Storm Drain: | | | Tenant: | |
| Aircraft Involved: | | | Tail Number: | |
| Fueling Company: | | | Cleaned By: | |
| Fueler Name: | | | Fueler Badge #: | |

METAR:

KDSM 251927Z VRB04KT 10SM TS FEW050CB SCT080 SCT130 BKN250 29/19 A2984 RMK AO2 LTG DSNT NE AND W RAE03 TSB26 OCNL LTGICCG VC SW-W TS VC SW-W MOV NE CB DSNT NE SE AND SW-NW MOV NE TCU ALQDS P0000 T02940194

Summary (required):

Location (map):

# Airport Operations

| | | | | | |
|---|---|---|---|---|---|
| Log Entered | 08/28/2017 09:04 | Entered By | Jeremy Owings | | |
| Event Date/Time | 08/25/2017 21:56 | Close Date | | Days Open | 780 |

HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 8/25/2017 21:56 | Location: | SOUTH CARGO |
| Material: | Jet A | Amount (gallons): | 30 |
| Equipment Involved: | A300 | Cause: | Equipment Failure |
| ARFF Response: | Yes | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | UPS |
| Aircraft Involved: | Yes | Tail Number: | N145 UP |
| Fueling Company: | | Cleaned By: | |
| Fueler Name: | | Fueler Badge # | |

METAR: KDSM 260254Z 13009G16KT 10SM FEW110 SCT250 21/16 A3014

Summary (required):

UPS mechanic Rusty Stephens, 15654, was transferring fuel to the right outboard tank. The automatic shutoff did not work. About 30 gallons of Jet A was spilled. UPS personnel put down absorbent and booms stopping the spill from getting in the storm drain. ARFF and UPS cleaned up the spill. UPS will handle the contaminated materials. ARFF used 3 bags of absorbent and FM furnished 3 more.

| | | | | | |
|---|---|---|---|---|---|
| Log Entered | 08/13/2017 08:27 | Entered By | John Madison | | |
| Event Date/Time | 08/13/2017 08:27 | Close Date | | Days Open | 792 |

## HAZMAT SPILL

| | | | |
|---|---|---|---|
| Date / Time of Incident: | 08/13/2017 07:07 | Location: | |
| Material: | Hydraulic Fluid | Amount (gallons): | 4 |
| Equipment Involved: | CRJ | Cause: | Equipment Failure |
| ARFF Response: | Yes | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | American |
| Aircraft Involved: | Yes | Tail or Flight Number: | |
| Fueling Company: | | Cleaned By: | |
| Fueler Name: | | Fueler Badge Number: | |
| Fueler Name: | | | |

METAR: KDSM 131254Z 15007KT 10SM FEW060 FEW110 BKN160 OVC250 18/13 A3003 RMK AO2 RAB17E22 SLP162 P0000 T01830133

Weather:

Summary (required):

# Airport Operations

| | | | | | |
|---|---|---|---|---|---|
| Log Entered | 08/10/2017 14:50 | Entered By | Christian Kloster | | |
| Event Date/Time | 08/10/2017 14:50 | Close Date | | Days Open | 795 |

## HAZMAT SPILL

| | | | |
|---|---|---|---|
| Date / Time of Incident: | 08/10/2017 05:54 | Location: | |
| Material: | Jet A | Amount (gallons): | 3 |
| Equipment Involved: | Fuel truck | Cause: | Tank Overfill |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | Delta |
| Aircraft Involved: | Yes | Tail or Flight Number: | Signature Flight Support |
| Fueling Company: | | Cleaned By: | |
| Fueler Name: | SFS | Fueler Badge Number: | 16264 |
| Fueler Name: | Brian Curry | | |
| METAR: | KDSM 101854Z 25011KT 10SM FEW035TCU FEW090 SCT220 SCT300 31/19 A3001 RMK AO2 SLP153 TCU NE-E AND DSNT SE-S T03060194 | | |

Weather:

Summary (required):

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 11/28/2018 11:02 | Entered By | Matt Batina |
| Event Date/Time | 11/28/2018 11:02 | | |

HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 11/28/2018 11:02 | Location: | |
| Material Released: | | Amount (gallons): | |
| Equipment Involved: | | Cause: | |
| ARFF Response: | | Injuries Reported: | |
| Entered Storm Drain: | | Tenant: | |
| Aircraft Involved: | | Tail Number: | |
| Responsible Company: | | Cleaned By: | |
| Name: | | Badge #: | |

METAR: KDSM 281654Z 16009KT 10SM FEW080 BKN100 OVC200 M04/M09 A2995 RMK AO2 SLP156 T10391094

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required):

Location (map):

Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

| | | | |
|---|---|---|---|
| Log Entered | 11/12/2018 01:20 | Entered By | Nick Everhart |
| Event Date/Time | 11/12/2018 01:20 | | |

## HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 11/12/2018 01:20 | Location: | EAST CARGO |
| Material Released: | Glycol Deicing Fluid | Amount (gallons): | 5-10 |
| Equipment Involved: | Delta Deicer #19 | Cause: | Equipment Failure |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | Yes | Tenant: | QMS |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | Other (List Below) |
| Name: | | Badge #: | |

METAR: KDSM 120654Z 35018G25KT 10SM BKN028 BKN120 OVC130 M03/M08 A3039 RMK AO2 SLP299 T10331083

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required):

During my perimeter inspection I observed an area covered in glycol in the QMS leasehold. Upon reviewing the footage glycol can be observed leaking out of DGS Truck #19 on two separate occasions. The spill began on 11/9/18 around 19:45. Absorbent was placed around the drain to prevent anymore liquid from entering the drain. QMS will be notified that they need to clean the area in the morning.

P:\WORKING\2018\OPS\Incidents\Images\11 Nov\11-12-2018 Glycol Spill

Location (map):

Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

## ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 11/12/2018 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | | 11/12/2018 |

## MAP

## ATTACHMENTS

Spill

| | | | |
|---|---|---|---|
| Log Entered | 11/12/2018 00:28 | Entered By | Nick Everhart |
| Event Date/Time | 11/12/2018 00:30 | Close Date | 11/12/2018 04:02 |

Perimeter Inspection

## Perimeter and Public Protection Inspection

| | | | |
|---|---|---|---|
| Inspection Started: | 11/12/2018 12:30:00 AM | Inspection Completed: | 11/12/2018 1:05:00 AM |
| Perimeter Type: | Inner Perimeter | Conducted By: | DMAA Operations |
| All Gates Checked: | Yes | Unsecured Gates: | No |
| Fenceline Secure: | Yes | Signs In Place: | Yes |
| Fuel Farm Secure: | Yes | Wildlife Hazards: | No |

Discrepancies or Remarks

An area of Glycol was observed in the QMS leasehold. See hazmat report for more details. Additionally, I noticed T hangar #6 had its door open. I closed the and ensured it was locked.

Create Work Order for inoperable gtes, unsecure fecneline, and missing or damaged signs posted to prevent unauthorized access to the airfield.

Report unsecured gates / fenceline to SMS | Notify ASC and Operations / Security Manager

Log Entered 09/15/2018 13:37 Entered By Craig Stephens

Event Date/Time 09/15/2018 13:36

## HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 9/15/2018 11:58 | Location: | C7 |
| Material Released: | Jet A | Amount (gallons): | 10-15 |
| Equipment Involved: | Mobile Fueler #59 | Cause: | Equipment Failure |
| ARFF Response: | Yes | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | Envoy |
| Aircraft Involved: | Yes | Tail Number: | N96200 |
| Responsible Company: | Signature Flight Support | Cleaned By: | Signature Flight Support |
| Name: | Scott Wilke | Badge #: | 20033 |

METAR: KDSM 151754Z VRB05KT 10SM FEW075 31/21 A3013 RMK AO2 SLP193 T03060206 10311 20211 58009

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required):

Signature Flight Support fueler, Scott Wilke, was fueling AA Flight 1281, N96200, with truck #59, he states that per SFS procedure, he shut the right wing tank valve off at the correct level, 9,250 lbs, which diverted fuel to fill the center tank. The fuel gauge display for the right tank kept increasing and fuel started venting out of the left wing.

At the time of this report, SFS Supervisor Mike Armstrong can not determine if the fueler was in error or if the equipment on the aircraft failed or was in error.

Approximate dimension of spill area is L shaped. 84'x55'x30'x50'x54'x25'

ARFF responded.

SFS & Envoy personnel applied oil dry, swept material up, and placed in barrels.

SFS will process the disposal.

Pictures attached.

Location (map):

Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

## ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 09/15/2018 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | | 09/15/2018 |

## MAP

ATTACHMENTS

AA fuel spill1


AA fuel spill2


AA fuel spill3

Log Entered 09/02/2018 23:40 Entered By Christian Kloster

Event Date/Time 09/02/2018 23:39

## HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 9/2/2018 20:30 | Location: | Other |
| Material Released: | Oil Spill | Amount (gallons): | .03 |
| Equipment Involved: | tug | Cause: | Equipment Failure |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | Frontier |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | DMAA Maintenance |
| Name: | | Badge #: | |
| METAR: | N/A- spill was indoors | | |

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required):

During a terminal inspection I noticed a small oil spill at the north end of bag make-up. The ops center checked video to ascertain where the spill may have originated. Approximately 3 hours before the spill begins to wind its way onto the camera view there was a Frontier tug parked against the north wall which left the area. There were no other motorized vehicles in that area at the time or in-between and the floor was clear of any chemicals or liquids. Ops/BEO/Marsden were all utilized to clean the spill. The tug in question was found on the ramp but no oil was underneath it at the time.

P:\WORKING\2018\OPS\Incidents\Images\09 Sep\Tug prior to Spill Bag Make-up 9-1-18

P:\WORKING\2018\OPS\Incidents\Images\09 Sep\Spill in Bag Make-Up 9-1-18

Location (map):

Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 09/03/2018 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | | 09/03/2018 |

| | | | |
|---|---|---|---|
| Log Entered | 08/09/2018 12:27 | Entered By | William Brenny |
| Event Date/Time | 08/09/2018 12:27 | Days Open | 431 |

HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 8/9/2018 12:27 | Location: | EAST CARGO |
| Material Released: | Glycol Deicing Fluid | Amount (gallons): | 500 |
| Equipment Involved: | De-ice truck | Cause: | Equipment Failure |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | Delta |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | DMAA Maintenance |
| Fueler Name: | | Fueler Badge #: | |

METAR: KDSM 091654Z 24011KT 10SM FEW300 31/21 A2997 RMK AO2 SLP140 T03110206

Summary (required):

Field maintenance reported a glycol spill on the East Cargo Ramp. It appears a de-ice truck had leaked de-ice fluid from 200-300 feet off the A4 Gate until the turn into the glycol fill station (see attached photos) about a 5 feet by 1,000 feet of fluid was spilled. Ops 7 investigated and spoke with Dustin Powers at United, it was confirmed that they had a malfunction with one of their de-ice trucks. Field Maintenance cleaned up the spill.

Work order 501430 was created on 8/10/18 for work that had already been completed.

Location (map):

ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | 08/09/2018 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | 08/09/2018 |

## MAP


## ATTACHMENTS

Facing South from Terminal

From Blue line facing South

End of spill

| | | | |
|---|---|---|---|
| Log Entered | 08/08/2018 13:27 | Entered By | Joke Primrose |
| Event Date/Time | 08/08/2018 13:26 | Days Open | 432 |

## HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 8/8/2018 13:25 | Location: | C6 |
| Material Released: | Jet A | Amount (gallons): | 1.5 |
| Equipment Involved: | | Cause: | Tank Overfill |
| ARFF Response: | Yes | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | AA |
| Aircraft Involved: | Yes | Tail Number: | N9628W |
| Responsible Company: | Signature Flight Support | Cleaned By: | Signature Flight Support |
| Fueler Name: | | Fueler Badge #: | |

METAR: KDSM 081754Z VRB04KT 10SM FEW035 FEW250 29/17 A3000 RMK AO2 SLP152 T02890172 10289 20178 58004

Summary (required): While fueling the aircraft the fuel expanded which then spilled out of the wing.

Location (map):

### ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | 08/08/2018 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | 08/08/2018 |

| | | | |
|---|---|---|---|
| Log Entered | 07/27/2018 13:14 | Entered By | William Brenny |
| Event Date/Time | 07/27/2018 13:13 | Days Open | 444 |

HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 7/27/2018 13:10 | Location: | C6 |
| Material Released: | Jet A | Amount (gallons): | 1 |
| Equipment Involved: | Fuel Truck #59 | Cause: | Equipment Failure |
| ARFF Response: | Yes | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | American Airlines |
| Aircraft Involved: | Yes | Tail Number: | N424AA |
| Responsible Company: | Signature Flight Support | Cleaned By: | Signature Flight Support |
| Fueler Name: | David Spence | Fueler Badge #: | 19606 |

METAR: KDSM 271754Z 32009G14KT 10SM BKN042 BKN250 24/13 A3015 RMK AO2 SLP206 T02390128 10239 20144 58005

Summary (required): Mechanical failure in aircraft fuel system. Mr. Spence was filling aircraft, noticed the fuel panel numbers weren't changing as he was fueling. He went to turn off the fuel flow and by that time fuel had came out of the overfill even though the fuel panel did not read it was overfilled. 1-2 gallons had spilled underneath the left wing. 10x5 spill was measured. Chief 6 and 2 ARFF response trucks (3, 4) arrived at scene.

Location (map):

ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Send Completed Report to Ops Manager | AJ Graff | 01/01/1900 | 07/27/2018 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | 07/27/2018 |

## ATTACHMENTS

Fuel spill

| | | | |
|---|---|---|---|
| Log Entered | 07/10/2018 21:13 | Entered By | Sara Arnold |
| Event Date/Time | 07/10/2018 21:13 | Days Open | 461 |

HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 7/10/2018 20:45 | Location: | C6 |
| Material Released: | AvGas | Amount (gallons): | 5 |
| Equipment Involved: | AA Aircraft | Cause: | Other |
| ARFF Response: | Yes | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | |
| Aircraft Involved: | Yes | Tail Number: | N961TW |
| Responsible Company: | Signature Flight Support | Cleaned By: | Signature Flight Support |
| Fueler Name: | Mike Armstrong | Fueler Badge #: | 19545 |

METAR: KDSM 110154Z 09005KT 10SM FEW200 FEW250 28/22 A3006 RMK AO2 SLP170 T02830217

Summary (required): MD80 AA Flight 2388 was being fueled by Signature agent Mike Armstrong at gate C6 when the left wing vented causing fuel to spill out onto the ramp. An American agent called in the spill to the ops center. Ops 7 was dispatched to gate C6 and ARFF was called. The amount of fuel was estimated at 5 gallons and was promptly cleaned up by Signature.

Location (map):

ROUTING CHECKLIST

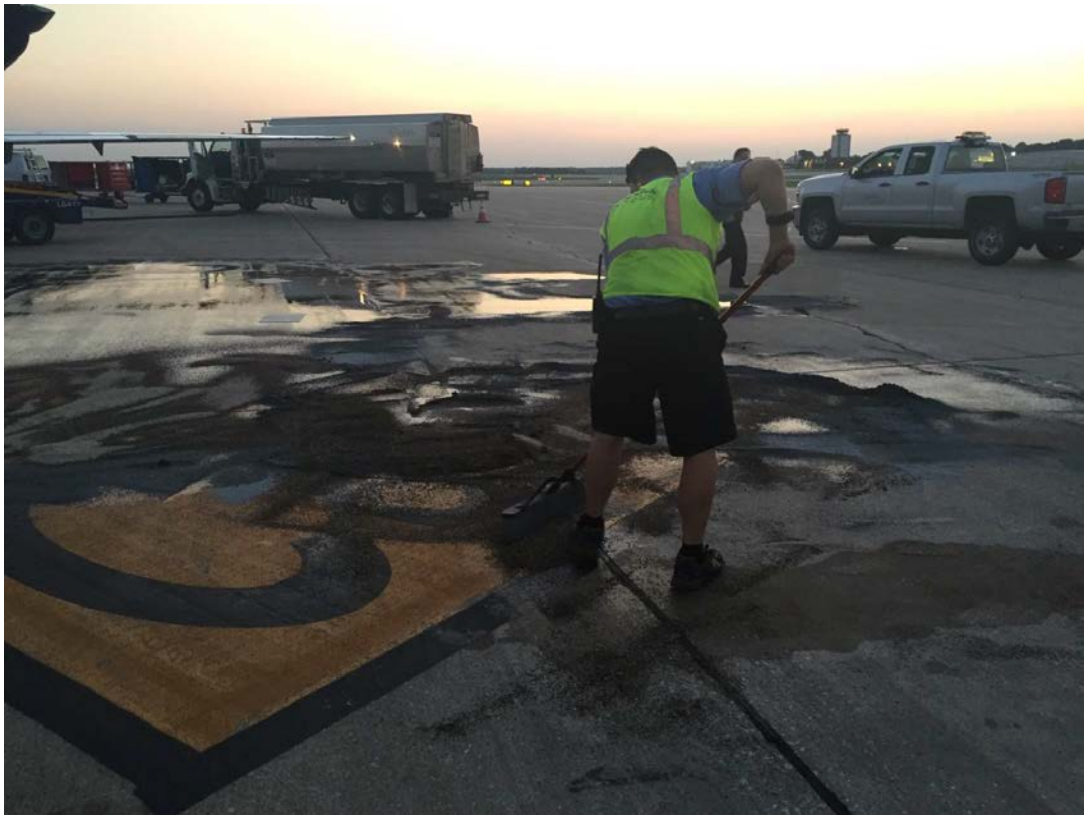
| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | 07/10/2018 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | 07/10/2018 |

## MAP


## ATTACHMENTS

Pictures



Pictures1

Pictures2

| | | | |
|---|---|---|---|
| Log Entered | 07/03/2018 10:15 | Entered By | Yuganesh Gunalan |
| Event Date/Time | 07/03/2018 10:15 | Days Open | 468 |

HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 7/3/2018 10:15 | Location: | EAST CARGO |
| Material Released: | Glycol Deicing Fluid | Amount (gallons): | 3 |
| Equipment Involved: | | Cause: | Unknown |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | Delta - DGS |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | Other (List Below) |
| Fueler Name: | | Fueler Badge #: | |

METAR: KDSM 031454Z 15008KT 10SM FEW240 SCT300 27/23 A3001 RMK AO2 SLP154 T02720228 57001

Summary (required): Ops 8 observed a Glycol deicing fluid spill at the East cargo ramp. There were approximately 3 gallons of fluid spilled due to a tipped over tote. Delta Airlines was advised on the spill and they agreed to clean it up as soon as possible.

Location (map):

ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | 07/03/2018 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | 07/03/2018 |

## ATTACHMENTS

Tipped over tote caused the spill

Close up picture of the spill

| | | | |
|---|---|---|---|
| Log Entered | 05/21/2018 00:34 | Entered By | Bill Klees |
| Event Date/Time | 05/21/2018 00:34 | Days Open | 511 |

HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 5/21/2018 00:07 | Location: | Other |
| Material Released: | Gasoline | Amount (gallons): | 1/16 |
| Equipment Involved: | TUG 174184 belonging to United (DGS) | Cause: | Equipment Failure |
| ARFF Response: | Yes | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | United |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | Other (List Below) |
| Fueler Name: | | Fueler Badge #: | |

METAR: KDSM 210442Z 06004KT 2SM +RA BR BKN016 BKN020 OVC025 15/14 A3008 RMK AO2 P0039 T01500139 $

Summary (required):

At 0007 the Ops Ctr received a call from the BEO that a TUG belonging to DGS (United) was leaking fuel in bag makeup. Ops Ctr tried calling United Ops and bag claim with no answer. I directed her to call the manager on his cell phone and have him get people in to effect a repair. I went to bag makeup and found the tug that was leaking. I directed Ops to call ARFF at 0015. When ARFF arrived they put floor dry on the fuel spill and attempted to tighten the leaking connection. ARFF did point out that it looked like an old leak as the paint was off the tank and there were several gas soaked pieces of paper towels on the tug. At 0028 I called the united mgr Dustin Powers back and told him no one from DGS had arrived. He said he called three people and got no answer. I told him he needed to keep calling until he got a response. I also said he needed to come in and take charge of the problem. I also told him the tug was put out of service until fully repaired. He responded that he couldn't get anyone in tonight to fix the leak. I said he had to get people in, move the tug out of the building and if it isn't fixed tonight to move it off of the airport. DGS manager arrived at 0100, he disconnected the fuel line and drained about 1/2 of fuel from the tank and re-tightened the line. He also cleaned up the floor dry and was bringing it to the United area for disposal. I checked at 0150 and the area was cleaned up and the tug was no longer leaking.

Billable OPS-2018-1055

Location (map):

ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | 05/22/2018 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | 05/22/2018 |

## MAP

| | | | |
|---|---|---|---|
| Log Entered | 05/17/2018 16:49 | Entered By | Nick Everhart |
| Event Date/Time | 05/17/2018 15:55 | Days Open | 515 |

## HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 5/17/2018 15:55 | Location: | Other |
| Material Released: | Other (Describe) | Amount (gallons): | 1 |
| Equipment Involved: | | Cause: | Tank Overfill |
| ARFF Response: | Yes | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | |
| Aircraft Involved: | | Tail Number: | |
| Responsible Company: | | Cleaned By: | |
| Fueler Name: | | Fueler Badge #: | |

METAR: KDSM 172054Z 08011KT 10SM FEW065 SCT250 BKN300 28/12 A2996 RMK AO2 SLP139 CB DSNT S MOV W T02830117 56018

Summary (required):

At 15:55 OPS 7 & 8, DMPD, and ARFF were notified that the TSA bag room had been evacuated due to a box smoking on the bag conveyor. Upon arrival TSA had re-entered the bag room and the box had frozen to the belt in the inspection area. The responsible passenger was contacted who advised the box contained a container of semen that had been frozen using liquid nitrogen. Delta stated that the passenger, Rodney Limes declared the box contained auto parts when he checked it in. The north belt was placed into contingency from 16:06 to 16:38 due to the incident. The box was taken outside of the bag room and the container was taken out so the remaining gas could be vented. Shortly after the container was returned to the owner who opted to drive to his planned destination instead of flying.

Videos at : V:\05 May\5-17-18 Liquid Nitrogen

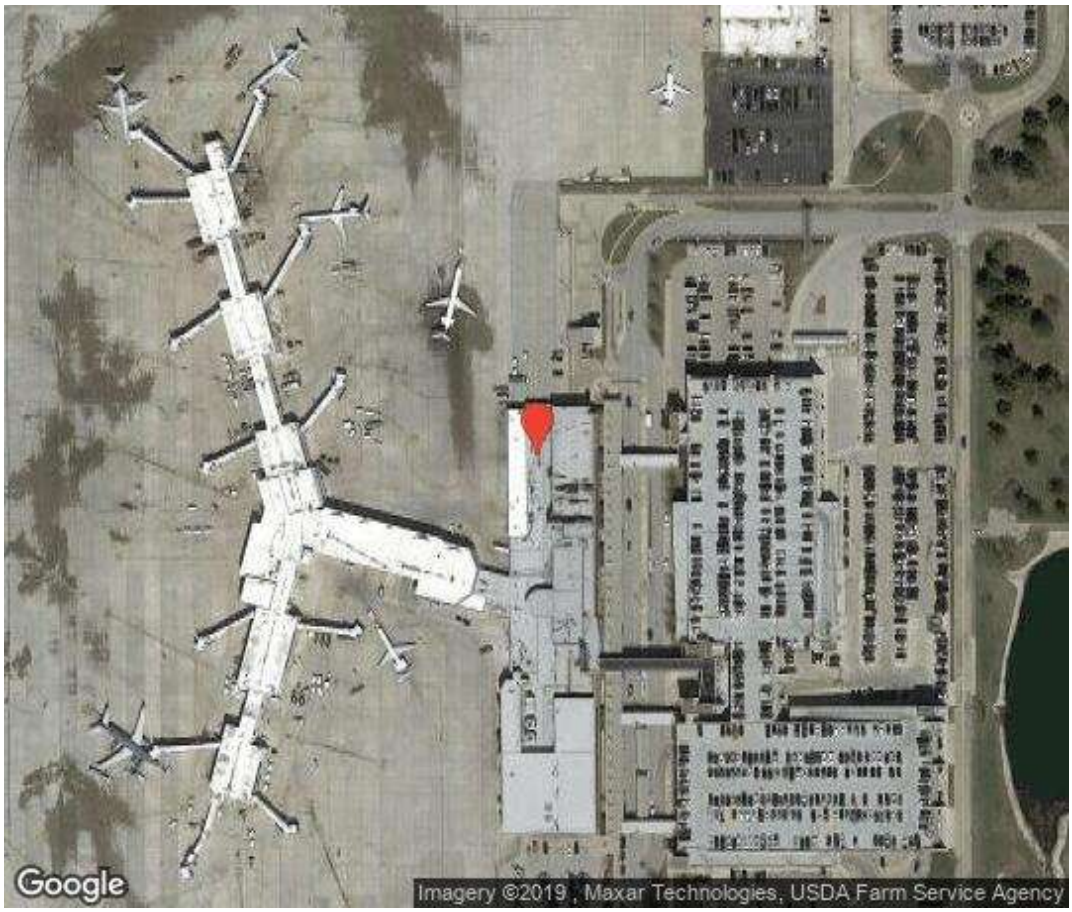
Location (map):

ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | 05/17/2018 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | 05/17/2018 |

## MAP



| | | | |
|---|---|---|---|
| Log Entered | 05/08/2018 14:00 | Entered By | Nick Everhart |
| Event Date/Time | 05/08/2018 13:30 | Days Open | 524 |

HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 5/8/2018 13:30 | Location: | C1 |
| Material Released: | Lavatory Waste | Amount (gallons): | 4 |
| Equipment Involved: | | Cause: | Equipment Failure |
| ARFF Response: | | Injuries Reported: | |
| Entered Storm Drain: | No | Tenant: | DGS |
| Aircraft Involved: | | Tail Number: | |
| Responsible Company: | | Cleaned By: | |
| Fueler Name: | | Fueler Badge #: | |

METAR:

KDSM 081854Z 13016G26KT 10SM FEW200 BKN250 OVC300 28/11 A2990 RMK AO2 PK WND 15028/1828 SLP120 T02780111

Summary (required):

OPS 7 observed liquid coming from a lavatory cart near Gate C1. DGS was advised they needed to clean up the liquid and dispose of it properly. QMS was called in to remove the cart so it could be properly repaired. Only 3-4 gallons leaked from the lavatory cart and absorbent was used to clean up the excess fluid. No storm drains were compromised.

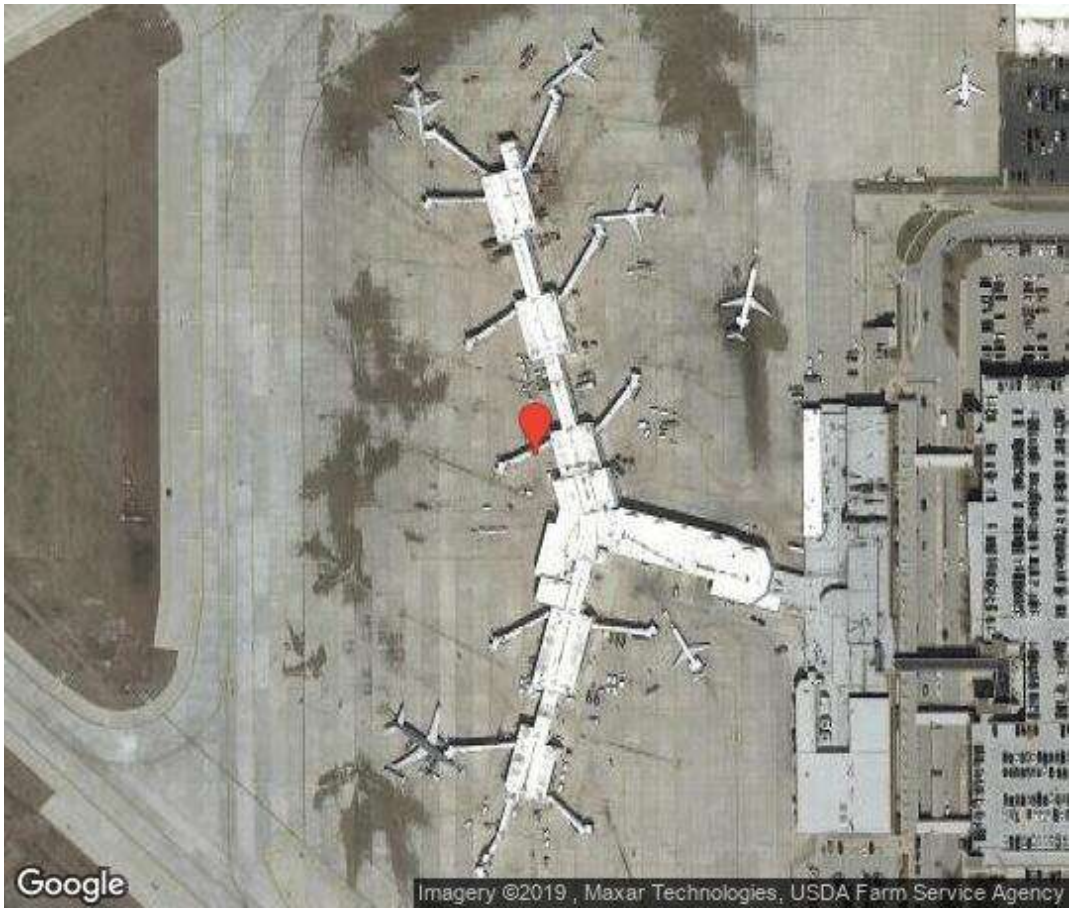
Location (map):

ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 05/08/2018 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | | 05/08/2018 |

## MAP




## ATTACHMENTS

Hazmat 1


Hazmat 2


Hazmat 3


FRONTIER
6197

| | | | |
|---|---|---|---|
| Log Entered | 05/01/2018 08:18 | Entered By | Nick Everhart |
| Event Date/Time | 05/01/2018 07:20 | Days Open | 531 |

HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 5/1/2018 07:20 | Location: | Other |
| Material Released: | Other (Describe) | Amount (gallons): | 15-20 |
| Equipment Involved: | | Cause: | Human Error |
| ARFF Response: | | Injuries Reported: | |
| Entered Storm Drain: | | Tenant: | |
| Aircraft Involved: | | Tail Number: | |
| Responsible Company: | | Cleaned By: | DMAA Maintenance |
| Fueler Name: | | Fueler Badge #: | |

METAR:

KDSM 011254Z 31008KT 5SM -TSRA BKN050CB BKN060 OVC080 16/13 A2984 RMK AO2 LTG DSNT SW-N RAB09 SLP099 FRQ LTGICCCCG E-N TS E-N MOV NE P0001 T01610128

Summary (required):

At 07:20 OPS 8 noticed while driving on the vehicle service road outside of bag claim there was a large amount of wet material that appeared to be sewage. The sewage most likely was from the previous day after the basement became partially flooded with sewage. Marsden without any direction from DMAA disposed of the hazordous material on the ramp. The decision was made to cone off the area and have a sweeper clean the area before a storm washed the material into the drain. The material was collected and properly disposed.

Location (map):

ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | 05/01/2018 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | 05/01/2018 |

## ATTACHMENTS

Hazmat

Hazmat 2


TRASH
ONLY

| | | | |
|---|---|---|---|
| Log Entered | 04/30/2018 17:35 | Entered By | Nick Everhart |
| Event Date/Time | 04/30/2018 16:45 | Days Open | 532 |

HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 4/30/2018 16:45 | Location: | Other |
| Material Released: | Other (Describe) | Amount (gallons): | 50-75 |
| Equipment Involved: | | Cause: | Unknown |
| ARFF Response: | | Injuries Reported: | |
| Entered Storm Drain: | No | Tenant: | |
| Aircraft Involved: | | Tail Number: | |
| Responsible Company: | | Cleaned By: | |
| Fueler Name: | | Fueler Badge #: | |

METAR: KDSM 302154Z 18025G32KT 10SM FEW150 FEW200 SCT250 28/08 A2980 RMK AO2 PK WND 18037/2138 SLP085 T02830078

Summary (required): At 16:45 Operations was advised that sewer waste had flooded into the basement near the boiler room. Only the Southern side of the basement was affected with no more than a few inches of liquid. Marsden was dispatched to clean the floors. ARFF was also dispatched to measure the air quality. Upon investigation by ARFF the air was found to be okay with no abnormal results.

Location (map):

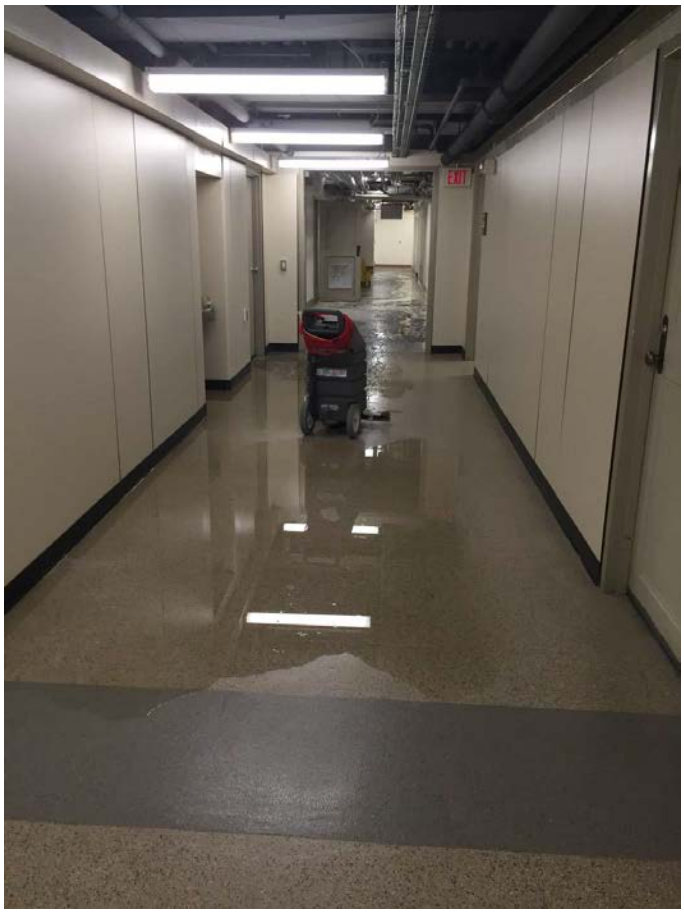
ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | 04/30/2018 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | 04/30/2018 |

## ATTACHMENTS

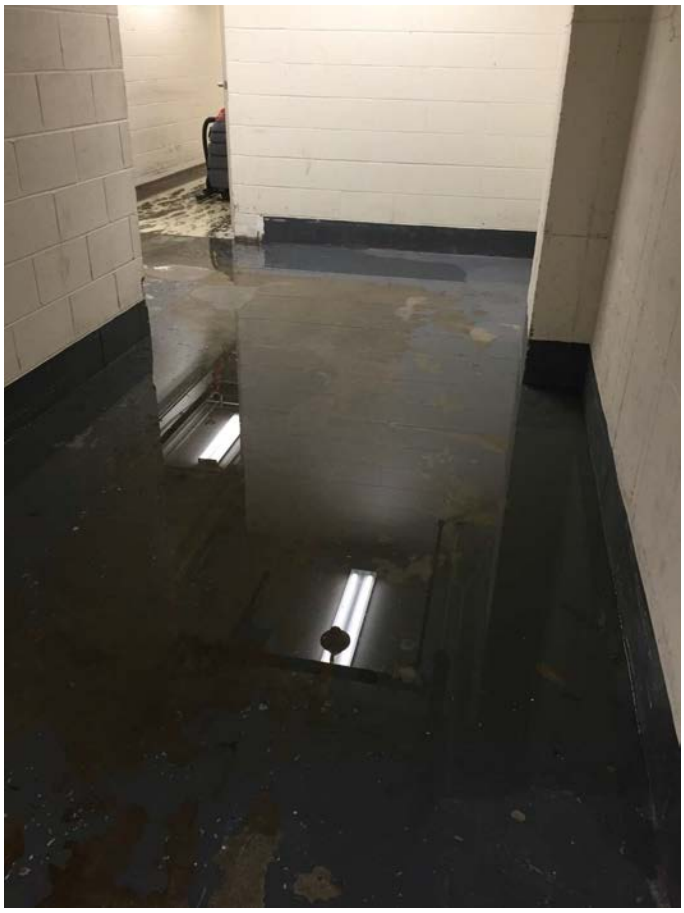
Basement 1




Basement 2

Basement 3

Basement 4



| | | | |
|---|---|---|---|
| Log Entered | 04/26/2018 18:00 | Entered By | Nick Everhart |
| Event Date/Time | 04/26/2018 18:00 | Days Open | 536 |

HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 4/26/2018 18:00 | Location: | C4 |
| Material Released: | Lavatory Waste | Amount (gallons): | 1-2 |
| Equipment Involved: | 19095 | Cause: | Equipment Failure |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | American |
| Aircraft Involved: | | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | Other (List Below) |
| Fueler Name: | | Fueler Badge #: | |

METAR: KDSM 262254Z 31016KT 10SM FEW080 SCT180 SCT250

Summary (required): At 17:45 DGS reported smelling a sewer smell on the ramp at Gate C4. A BEO was dispatched and reported an American Lavatory vehicle (19095) was leaking. American was advised the equipment needed to be fixed and the leaked fluid cleaned up. American advised they would use adsorbent and place a container under the vehicle until it could be properly repaired. No storm drains were compromised.

Location (map):

ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | 04/26/2018 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | 04/26/2018 |

## MAP


## ATTACHMENTS

Lavatory Cart

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 1/20/2019 1:21 AM | Entered By | William Brenny |
| Event Date/Time | 1/20/2019 1:21 AM | | |

## HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 1/20/2019 01:21 | Location: | Other |
| Material Released: | Diesel Fuel | Amount (gallons): | 2.9 |
| Equipment Involved: | Gate 5 Diesel Pump 1 | Cause: | Equipment Failure |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | DMAA Maintenance | Cleaned By: | DMAA Maintenance |
| Fueler Name: | | Fueler Badge #: | |

METAR: KDSM 200654Z 34008KT 10SM OVC220 M17/M20 A3035 RMK AO2 SLP298 T11671200 $

Summary (required): Christian McCoy badge number 19961 DGS UA reported that the diesel pump 1 at gate 5 was leaking from the hose connection to the pump housing. The pump had read 2.9 gallons. Absorbent material was used to clean up the spill. Field maintenance locked out the pump so it would not be used and a yellow phone announcement was made to available tenants. Pump to be turned off on EJ ward until it can be fixed on Tuesday.

Location (map):

### ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 01/20/2019 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | | |

MAP

ATTACHMENTS

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 2/07/2019 16:27 PM | Entered By | Sara Arnold |
| Event Date/Time | 2/07/2019 15:26 PM | | |

## HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 2/7/2019 15:26 | Location: | C2 |
| Material Released: | Jet A | Amount (gallons): | 1 |
| Equipment Involved: | Signature fuel truck | Cause: | Equipment Failure |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | Delta |
| Aircraft Involved: | Yes | Tail Number: | |
| Responsible Company: | Signature Flight Support | Cleaned By: | Signature Flight Support |
| Fueler Name: | Sal Johnson | Fueler Badge #: | |

METAR: KDSM 072154Z 29022G32KT 3SM BLSN SCT018 BKN024 M13/M18 A3006 RMK AO2 PK WND 28036/2129 SLP199 T11331178 $

Summary (required): The senser in the aircraft malfunctioned and did not stop the fueling which caused the over spill.

Location (map):

### ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 02/12/2019 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | | |

MAP

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 2/18/2019 8:51 AM | Entered By | Nick Everhart |
| Event Date/Time | 2/18/2019 8:50 AM | | |

## HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 2/18/2019 08:50 | Location: | C4 |
| Material Released: | Glycol Deicing Fluid | Amount (gallons): | 25 |
| Equipment Involved: | Deicer 16 | Cause: | Human Error |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | DGS |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | |
| Fueler Name: | | Fueler Badge #: | |

METAR: KDSM 181354Z 33006KT 10SM FEW180 SCT250 M10/M11 A3036 RMK AO2 SLP298 T11001111

Summary (required):

At 08:00 operations was notified by Signature that deicer fluid had been sprayed past the blue line across from Gate C4. Upon review of the footage DGS Deicer truck #16 can be seen deicing an aircraft. Although the aircraft is parked within the containment area the operator over sprayed causing Deicer fluid to go outside of the containment area.

P:\WORKING\2019\OPS\Incidents\Images\02 FEB\2-18 Glycol Spill

Location (map):

### ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 02/18/2019 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | | |

MAP

ATTACHMENTS

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 2/24/2019 13:29 PM | Entered By | Nick Everhart |
| Event Date/Time | 2/24/2019 7:15 AM | | |

## HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 2/24/2019 07:15 | Location: | C2 |
| Material Released: | Glycol Deicing Fluid | Amount (gallons): | 25 |
| Equipment Involved: | DGS Deicer | Cause: | Human Error |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | DGS |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | |
| Fueler Name: | | Fueler Badge #: | |

METAR:

KDSM 241320Z 30029G45KT 1SM R31/4500VP6000FT -SN BLSN BR SCT014 SCT020 M11/M13 A3000 RMK AO2 PK WND 31045/1316 TWR VIS 2 PRESRR

Summary (required):

At 07:15 DGS Deicer truck #580519 deiced a CRJ 900 that had pushed off of Gate C2. The operator over sprayed and approximately 25 gallons of deicer fell past the blue containment line. The winds at the time of incident were gusting to 45 knots.

Video will be added on 2/25/19

Location (map):

### ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 02/24/2019 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | | |

MAP

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 3/18/2019 5:22 AM | Entered By | William Brenny |
| Event Date/Time | 3/18/2019 5:22 AM | | |

## HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 3/18/2019 05:22 | Location: | Other |
| Material Released: | Diesel Fuel | Amount (gallons): | .5 |
| Equipment Involved: | | Cause: | Unknown |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | DMAA Maintenance |
| Fueler Name: | | Fueler Badge #: | |

METAR: KDSM 180954Z 32004KT 10SM CLR M02/M04 A3040 RMK AO2 SLP303 T10221039

Summary (required):

During a perimeter inspection, Ops 7 (William Brenny) came across a spill at the VG5 pumps. Absorbent material was applied so the spill could be cleaned up and Field Maintenance was called to complete the cleanup.

There was no report previously and it is unknown at this time who caused the spill. A reminder e-mail was sent to the airlines to advise them to call if/when their staff has a fluid spill.

This spill occurred on the NE side of pumps 3 and 4.

Location (map):

ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | | |

ATTACHMENTS

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 4/04/2019 13:31 PM | Entered By | Craig Stephens |
| Event Date/Time | 4/04/2019 13:31 PM | | |

HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 4/4/2019 13:31 | Location: | Other |
| Material Released: | Gasoline | Amount (gallons): | .5 |
| Equipment Involved: | Tug | Cause: | Tank Overfill |
| ARFF Response: | Yes | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | Allegiant |
| Aircraft Involved: | No | Tail Number: | A2044 |
| Responsible Company: | Other (List Below) | Cleaned By: | Other (List Below) |
| Fueler Name: | Unknown | Fueler Badge #: | |

METAR: KDSM 041754Z 10010G19KT 10SM OVC018 10/05 A3013 RMK AO2 SLP206 60000 T01000050 10100 20067 58006

Summary (required):

Allegiant Airline tug #A2044, was parked outdoors, on the slope behind bag makeup. It was dripping fuel from the left rear of the fuel tank. The tug was topped off with auto gas. The fuel tank is shielded with a protective housing. The fuel appears to be coming from somewhere at the top of the tank, then seeping to the lower left corner of the protective shield and then dripping to the ground.
Could not make contact with any Allegiant personnel. Dispatched ARFF and FM. ARFF applied oil dry and swept into pile at drip point. Left messages with Allegiant personnel to make contact with Ops 7 upon their return and to clean the oil dry from the pavement surface.

FM did not clean up service. Billable work order cancelled.

Location (map):

ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 04/04/2019 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | | |

MAP

ATTACHMENTS

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 4/14/2019 9:59 AM | Entered By | William Brenny |
| Event Date/Time | 4/14/2019 9:59 AM | | |

## HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 4/14/2019 09:59 | Location: | A4 |
| Material Released: | Lavatory Waste | Amount (gallons): | 15-20 |
| Equipment Involved: | Lav cart | Cause: | Human Error |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | United DGS |
| Aircraft Involved: | Yes | Tail Number: | N860AS |
| Responsible Company: | Other (List Below) | Cleaned By: | Other (List Below) |
| Fueler Name: | | Fueler Badge #: | |

METAR: KDSM 132254Z 01012KT 10SM FEW050 BKN250 BKN300 09/M04 A3009 RMK AO2 SLP196 T00891039

Summary (required):

Ops 7 (William Brenny) came across a dried lav cart spill at the A4A parking spot. Reviewing camera 283 at 1816 on 4/13/19 a UA DGS employee is seen lifting the lav cart hose as it come disconnected and spills on the ground.

Video is located in the V drive: V:\04 APR\4-13 A4 lav cart spill

Location (map):

### ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 04/14/2019 |
| Send Completed Report to Director of Engineering | Bryan Belt | 01/01/1900 | | |

MAP

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 4/28/2019 6:22 AM | Entered By | William Brenny |
| Event Date/Time | 4/28/2019 6:22 AM | | |

## HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 4/21/2019 06:22 | Location: | C7 |
| Material Released: | Jet A | Amount (gallons): | .5 |
| Equipment Involved: | CRJ 700 | Cause: | Equipment Failure |
| ARFF Response: | Yes | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | Envoy |
| Aircraft Involved: | Yes | Tail Number: | N569NN |
| Responsible Company: | Other (List Below) | Cleaned By: | Other (List Below) |
| Fueler Name: | Signature | Fueler Badge #: | 25598 |

METAR: KDSM 281054Z 13004KT 10SM FEW170 BKN250 M01/M02 A3012 RMK AO2 SLP208 T10061017

Summary (required):

AA called about a minor fuel spill at C7. ARFF enroute at 0627, arrival at 0627, Clearing scene at 0630 - spill was cleaned prior to arrival. ARFF back at station at 0632.

Austin Farr fueled AA5677 to CLT. After fueling the aircraft he reported to Envoy that there was a small leak. Once Ops 7 (William Brenny) arrived we confirmed there was a very small leak, it was being collected with absorbent material, pads were already laid down. Jody Lovan (20052) came out to try and reset the fuel seal to try and get the leak to stop. After doing so it appeared the leak was going to continue. Maintenance was called to try and fix. At 0722 AA5677 was pushed back and de-icing.

Spill was cleaned up by Envoy. See attached photo.

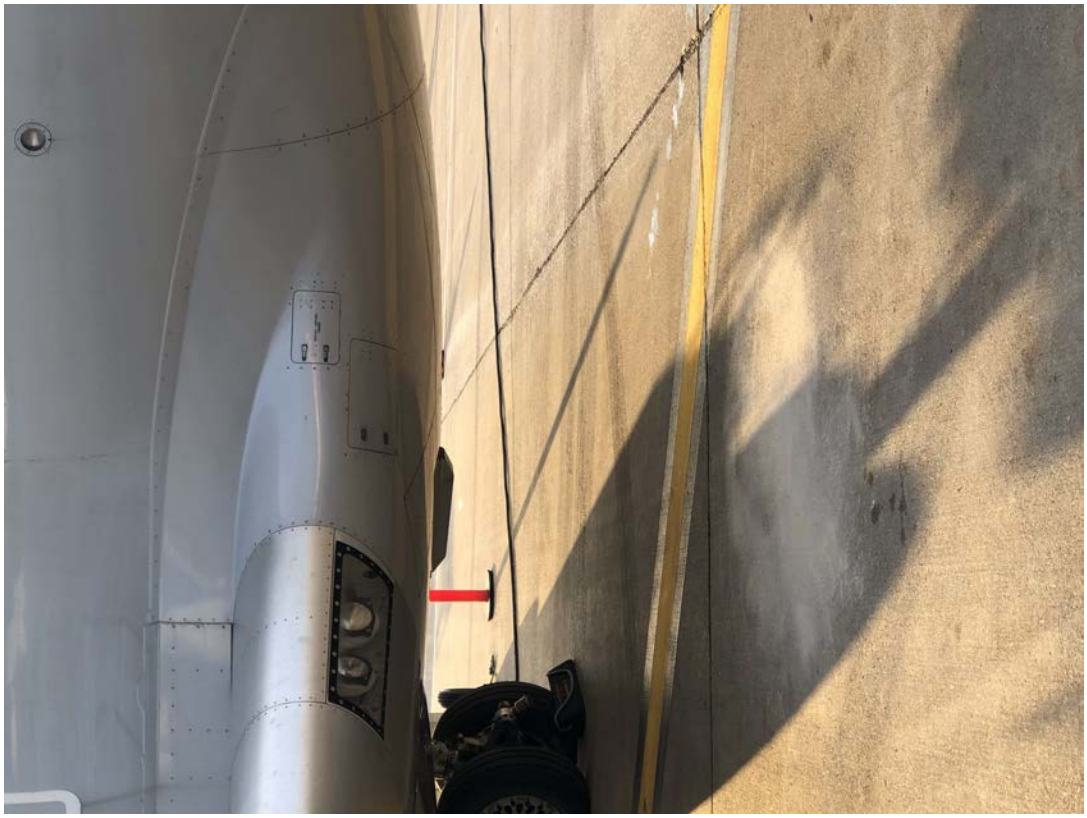
Location (map):

### ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 04/28/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | | 04/29/2019 |

MAP

ATTACHMENTS



# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 4/23/2019 11:44 AM | Entered By | Nick Everhart |
| Event Date/Time | 4/23/2019 11:44 AM | | |

## HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 4/23/2019 11:44 | Location: | A5 |
| Material Released: | Lavatory Waste | Amount (gallons): | 3-5 |
| Equipment Involved: | | Cause: | Unknown |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | United |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | Other (List Below) |
| Fueler Name: | | Fueler Badge #: | |

METAR: KDSM 231554Z 01009KT 10SM FEW019 OVC250 11/05 A3013 RMK AO2 SLP205 T01110050

Summary (required): During an inspection of the airline ramp blue lavatory waste was discovered in front of Gate A5. United Operations was advised that the spill needed to be cleaned up as soon as possible. No spill was ever reported to Airport Operations.

Location (map):

### ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 04/23/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | | |

MAP

ATTACHMENTS

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 5/16/2019 9:17 AM | Entered By | William Brenny |
| Event Date/Time | 5/16/2019 9:17 AM | | |

## HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 5/16/2019 09:17 | Location: | Other |
| Material Released: | Diesel Fuel | Amount (gallons): | 1-2g |
| Equipment Involved: | Airline Equipement | Cause: | Tank Overfill |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | Allegiant/ QuickFlight |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | DMAA Maintenance |
| Fueler Name: | Tim Overland | Fueler Badge #: | |
| METAR: | KDSM 161354Z 22011KT 10SM FEW120 FEW250 23/17 A2971 RMK AO2 SLP053 T02330172 | | |

Summary (required):

Tim called the Ops center stating he had a spill at the VG5 pumps. He said the spill was diesel fuel and he had put some pads to help soak of and contain the fuel. He requested Field Mx come and clean up the rest.

See attached photos of spill.

Location (map):

### ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 05/16/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | | |

MAP

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 6/05/2019 6:51 AM | Entered By | Nick Everhart |
| Event Date/Time | 6/05/2019 6:51 AM | | |

## HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 6/5/2019 06:51 | Location: | Other |
| Material Released: | Diesel Fuel | Amount (gallons): | 2 |
| Equipment Involved: | United Pushback | Cause: | Tank Overfill |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | United |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | Other (List Below) |
| Fueler Name: | | Fueler Badge #: | |

METAR:

KDSM 051054Z 16006KT 10SM FEW040 SCT150 SCT250 20/18 A2973 RMK AO2 SLP060 CB DSNT N-NE MOV SE TCU DSNT NW-N T02000183 $

Summary (required):

United employee Richard Martinez advised that he spilled some diesel fuel while refueling their pushback. Richard was advised that the spill needed to be cleaned up and the used oil dry properly disposed of. The spill was never cleaned up and work order 507545 was issued and made billable to United.

Location (map):

### ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 06/05/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | | |

MAP

ATTACHMENTS

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 6/08/2019 8:01 AM | Entered By | Nick Everhart |
| Event Date/Time | 6/08/2019 8:01 AM | | |

## HAZMAT SPILL

Send All HAZMAT Reports to SMS | Include Images as Attachments | Link Related Forms

| | | | |
|---|---|---|---|
| Incident Time: | 6/8/2019 07:42 | Location: | Other |
| Material Released: | Jet A | Amount (gallons): | 5 |
| Equipment Involved: | Fuel Truck | Cause: | Other |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Signature Flight Support | Cleaned By: | Signature Flight Support |
| Fueler Name: | Mike Armstrong | Fueler Badge #: | 19545 |

METAR: KDSM 081254Z 11008KT 10SM CLR 21/14 A2995 RMK AO2 SLP134 T02110139

Summary (required): Operations was notified by MTX 9 that a fuel truck had spilled fuel near vehicle gate 5. The spill started at vehicle gate 5 and stopped at the intersection of Duck Pond Rd and Leland Ave. Signature stated that it was most likely due to the fuel expanding and spilling out of the trough located on top of the truck. The spill was cleaned up by Signature shortly after it happened.

Location (map):

### ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 06/08/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | | |

MAP

ATTACHMENTS

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 6/21/2019 2:17 AM | Entered By | William Brenny |
| Event Date/Time | 6/21/2019 2:17 AM | | |

## HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 6/20/2019 20:13 | Location: | Other |
| Material Released: | Lavatory Waste | Amount (gallons): | 5 |
| Equipment Involved: | Lav Cart | Cause: | Unknown |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | American/ Envoy? |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | DMAA Maintenance |
| Name: | | Badge #: | |

METAR: KDSM 210654Z 14009KT 10SM FEW085 SCT250 20/15 A2982 RMK AO2 SLP091 T02000150

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required):

Found lav waste in the drive through lane by the trituator during ramp inspection (linked to form). Looking back at the footage you an see at 2013, American backing out of the trit room into the drive lane in the same fashion as the spill (see attached photos).

Video recorded and saved in V:\06 JUN\6-20 Trit Room Mess.

Location (map):

Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | 06/21/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | |

## MAP

## ATTACHMENTS

# Airport Operations

Log Entered 7/12/2019 10:27 AM Entered By Nick Everhart

Event Date/Time 7/11/2019 20:30 PM

## HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 7/12/2019 20:30 | Location: | Other |
| Material Released: | Oil Spill | Amount (gallons): | 500 |
| Equipment Involved: | | Cause: | Equipment Failure |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | DMAA Maintenance | Cleaned By: | Other (List Below) |
| Name: | | Badge #: | |

METAR: KDSM 121454Z 20006KT 10SM FEW030 FEW300 26/18 A3000 RMK AO2 SLP151 T02610183 56001

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required):

During the night on 7/11/19 a copper pipe carrying oil in the Field Maintenance shop burst causing oil to spill into the drain. The oil was captured inside a seperater in the adjacent wash bay. Any remaining oil on the floor was cleaned using oil dry and a company was called to clean the drain.

Location (map):

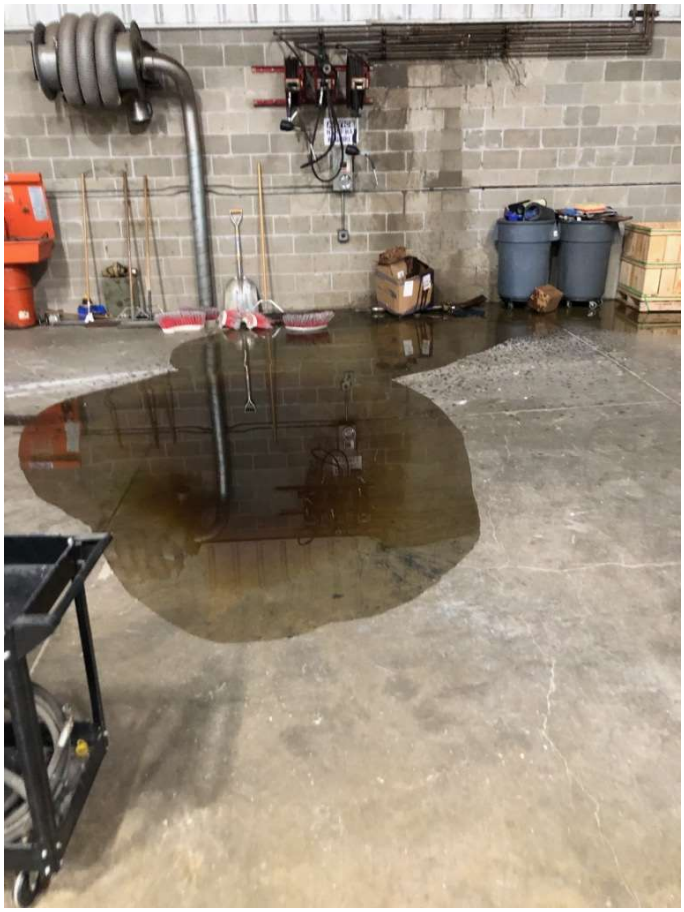
Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

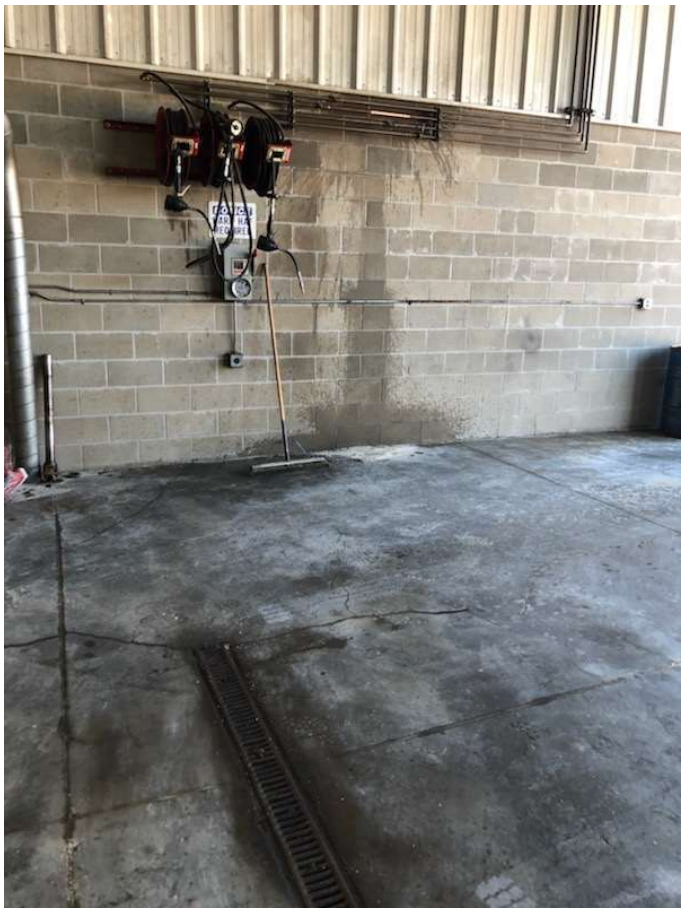
ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | 07/12/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | |

## ATTACHMENTS





# Airport Operations

Log Entered 6/25/2019 3:54 AM Entered By William Brenny

Event Date/Time 6/25/2019 3:54 AM

## HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 6/25/2019 03:54 | Location: | Other |
| Material Released: | Diesel Fuel | Amount (gallons): | 1 gal |
| Equipment Involved: | GSE | Cause: | Unknown |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | DMAA Maintenance |
| Name: | | Badge #: | |
| METAR: | | | |

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required):

During 139 inspection found VG 5 pumps had a diesel fuel spill. Unable to find responsible party. Field Maintenance to clean up spill and refill spill kit.

Spill about 4 feet by 3 feet. See attached photo.

Location (map):

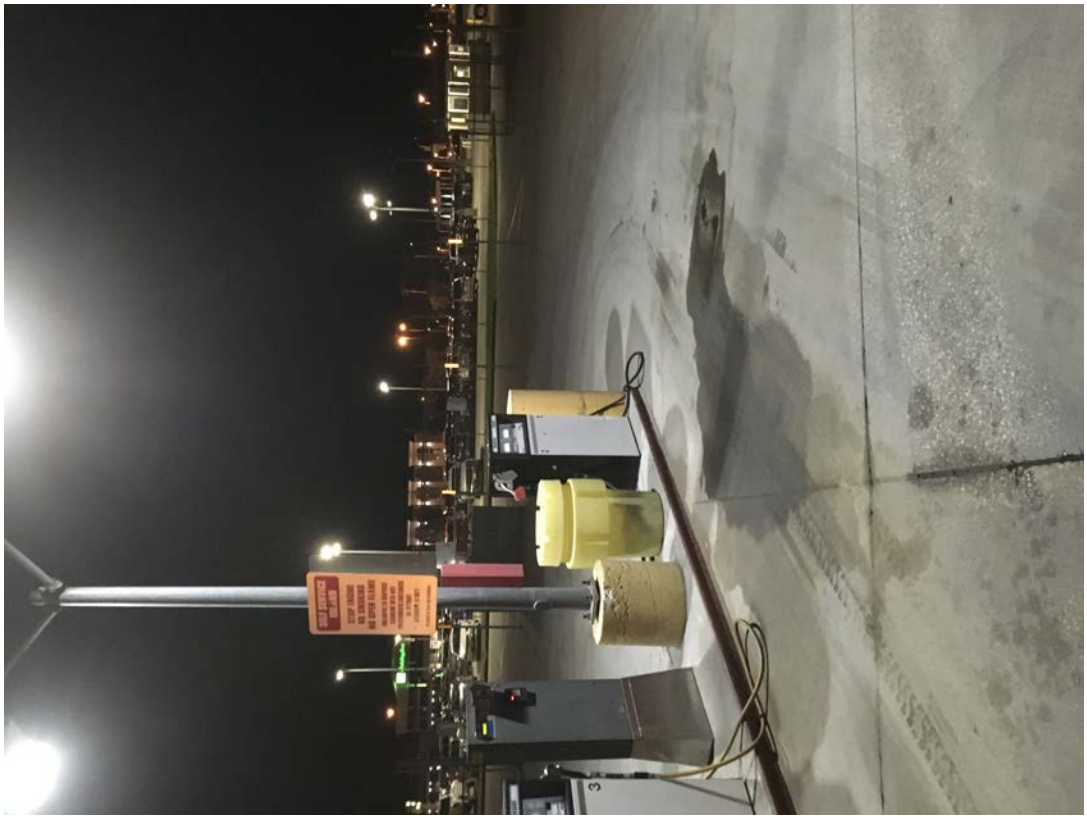
Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | 06/25/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | |

## ATTACHMENTS



# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 6/28/2019 5:15 AM | Entered By | William Brenny |
| Event Date/Time | 6/28/2019 5:15 AM | | |

## HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 6/28/2019 02:15 | Location: | Other |
| Material Released: | Lavatory Waste | Amount (gallons): | 10-20 |
| Equipment Involved: | Lav Cart | Cause: | Human Error |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | Envoy |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | Other (List Below) |
| Name: | | Badge #: | |

METAR: KDSM 280954Z 18010KT 10SM SCT250 24/21 A3000 RMK AO2 SLP149 T02440211

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required):

At 0215 to 0258 Envoy is observed via the camera system dumping incorrectly in the tirt room, this caused a spill in the underpass next to the tirt room.

See attached photo. They will be advised to clean up spill.

Video is in the V:drive as 6-28 Tirtuator Mess

Location (map):

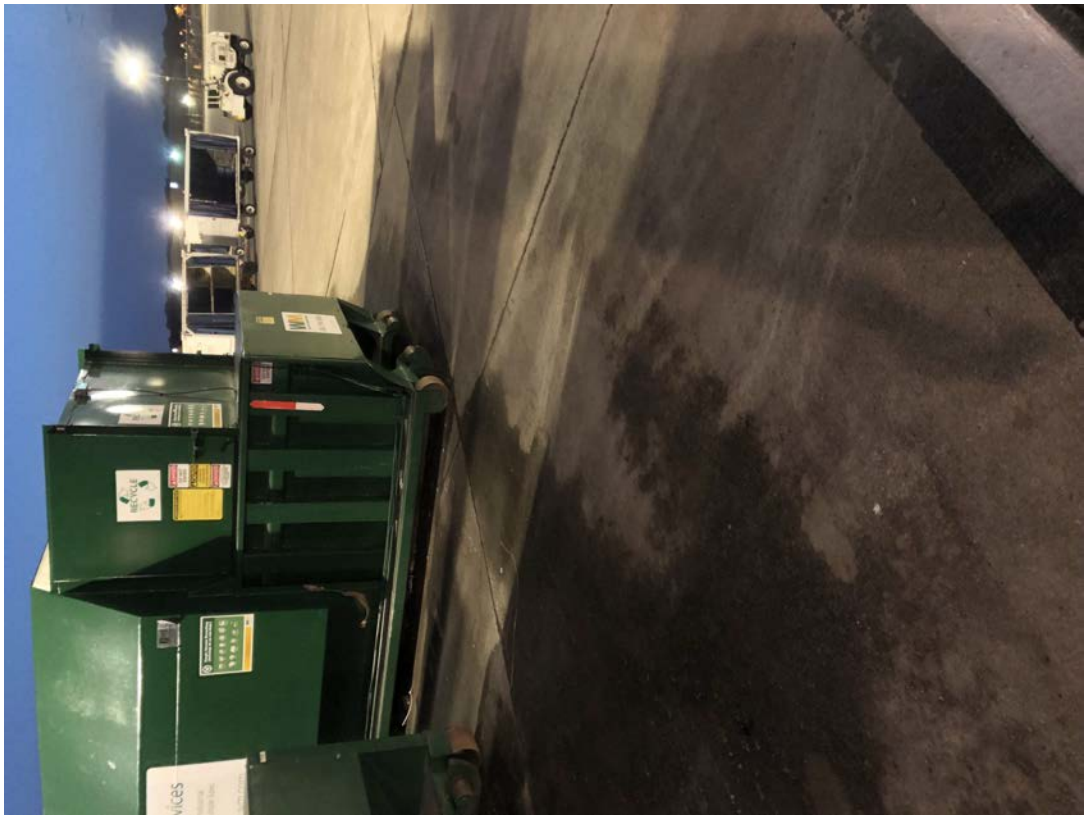
Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | 06/28/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | |

## ATTACHMENTS




STOP


ENTRANCE
ONLY

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 7/04/2019 6:36 AM | Entered By | Nick Everhart |
| Event Date/Time | 7/04/2019 6:36 AM | | |

## HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 7/4/2019 06:36 | Location: | SIGNATURE |
| Material Released: | Jet A | Amount (gallons): | 3 |
| Equipment Involved: | Fuel Truck | Cause: | Equipment Failure |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | Signature |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Signature Flight Support | Cleaned By: | Signature Flight Support |
| Name: | | Badge #: | |

METAR: KDSM 041054Z 14006KT 10SM FEW060 BKN085 BKN140 BKN250 22/20 A2989 RMK AO2 SLP117 T02170200 $

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required): During a perimeter inspection Signature Truck 047280 was observed with an active fuel leak. The truck was taken out of service immediately and Signature notified. Signature will put down absorbent and ensure that the fuel is cleaned up. ARFF was notified

Location (map):

Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | 07/04/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | |

## MAP

## ATTACHMENTS

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 7/17/2019 5:48 AM | Entered By | Nick Everhart |
| Event Date/Time | 7/17/2019 5:48 AM | | |

## HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 7/17/2019 05:48 | Location: | Other |
| Material Released: | Diesel Fuel | Amount (gallons): | 2 |
| Equipment Involved: | N/A | Cause: | Unknown |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | DMAA Maintenance |
| Name: | | Badge #: | |

METAR: KDSM 170954Z 14006KT 10SM FEW040 24/21 A2987 RMK AO2 SLP105 T02390206

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required):

A small fuel spill was located at the fuel pumps near vehicle gate 5. Absorbent was spread over the spill. Work order 508342 issued for field to clean the used absorbent. Footage was reviewed and no responsible parties could be found.

Location (map):

Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | 07/17/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | |

MAP

# Airport Operations

Log Entered 7/27/2019 8:37 AM Entered By Nick Everhart

Event Date/Time 7/27/2019 6:00 AM

## HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 7/27/2019 06:00 | Location: | Other |
| Material Released: | Jet A | Amount (gallons): | 3-5 |
| Equipment Involved: | Fuel Pump | Cause: | Human Error |
| ARFF Response: | Yes | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | Meredith |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | Other (List Below) |
| Name: | | Badge #: | |

METAR: KDSM 271254Z 21008KT 10SM FEW140 BKN190 BKN250 23/17 A3007 RMK AO2 SLP173 ACC NE AND W-NW T02280167

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required):

During a perimeter inspection fuel was observed leaking around the fuel pumps at Meredith. Some of the fuel had leaked into the grass near the concrete base of the fuel pumps. An additional 3-5 gallons was located in the containment tray beneath the pumps. Absorbant was placed around the fuel pumps to prevent any additional fuel from leaking out. Multiple attempts were made to contact Meredith without success. ARFF was placed on standby near the fuel pumps as a precaution. Roughly 90 minutes later the chief pilot called back and a technician from Meredith was dispatched to clean the spill. The technician stated that the spill occurred the day before when he forgot to close the sump valves while fueling an aircraft. Jet fuel flowed from the sumps and was captured by the containment tray located beneath the pumps. The technician stated that he had called operations after the spill occurred and was advised he could let the fuel evaporate. I advised the technician that the spill should have been cleaned up immediately as the pool of fuel posed a fire hazard. The spill was cleaned without further incident.

Location (map):

Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | 07/27/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | |

## MAP

## ATTACHMENTS

# Airport Operations

Log Entered 7/29/2019 14:50 PM Entered By Joke Primrose

Event Date/Time 7/29/2019 14:50 PM

## HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 7/29/2019 14:45 | Location: | C4 |
| Material Released: | Jet A | Amount (gallons): | 2.5 |
| Equipment Involved: | Signature Fuel Truck | Cause: | Equipment Failure |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | Delta |
| Aircraft Involved: | Yes | Tail Number: | N901XJ |
| Responsible Company: | Signature Flight Support | Cleaned By: | Signature Flight Support |
| Name: | Benjamin Reeves | Badge #: | 20114 |

METAR: KDSM 291854Z 31014G23KT 10SM FEW050 29/14 A2996 RMK AO2 PK WND 32026/1820 SLP137 T02890139

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required): Signature employee Benjamin Reeves was fueling Delta flight 5126 at gate C4. Mr. Reeves stated that the over fuel valve did not work on the aircraft which caused the overflow of fuel onto the ground. Signature cleaned the area.

Location (map):

Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | 07/29/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | |

## MAP

## ATTACHMENTS

# Airport Operations

Log Entered 7/31/2019 2:17 AM Entered By William Brenny

Event Date/Time 7/31/2019 2:17 AM

## HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 7/31/2019 01:30 | Location: | Other |
| Material Released: | Lavatory Waste | Amount (gallons): | 5 |
| Equipment Involved: | Lav Cart | Cause: | Unknown |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | DMAA Maintenance |
| Name: | | Badge #: | |

METAR: KDSM 310654Z 09005KT 10SM FEW160 19/13 A3012 RMK AO2 SLP192 T01890133

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required):

Noticed lav spill, after reviewing footage, unable to determine the cause and responsible party. See attached photos.

WO for field mx to clean the drive lane will be issued along with Marsden to clean tirt room.

Location (map):

Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | 07/31/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | |

## ATTACHMENTS

# Airport Operations

Log Entered 8/03/2019 18:23 PM Entered By William Brenny

Event Date/Time 8/03/2019 18:23 PM

## HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 8/3/2019 18:23 | Location: | Other |
| Material Released: | Lavatory Waste | Amount (gallons): | 15 |
| Equipment Involved: | Lav tug | Cause: | Human Error |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | Envoy |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | Other (List Below) |
| Name: | | Badge #: | |

METAR: KDSM 032254Z 12005KT 10SM FEW048 28/18 A3004 RMK AO2 SLP163 T02830178

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required): During ramp inspection Ops 7 (William Brenny) observed a lav spill near the the tirt room in the drive lane. Ops confirmed on the camera the spill occurred around 1545. Ops 7 made contact with Envoy Ops, they said they would have someone go clean it up.

Location (map):

Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

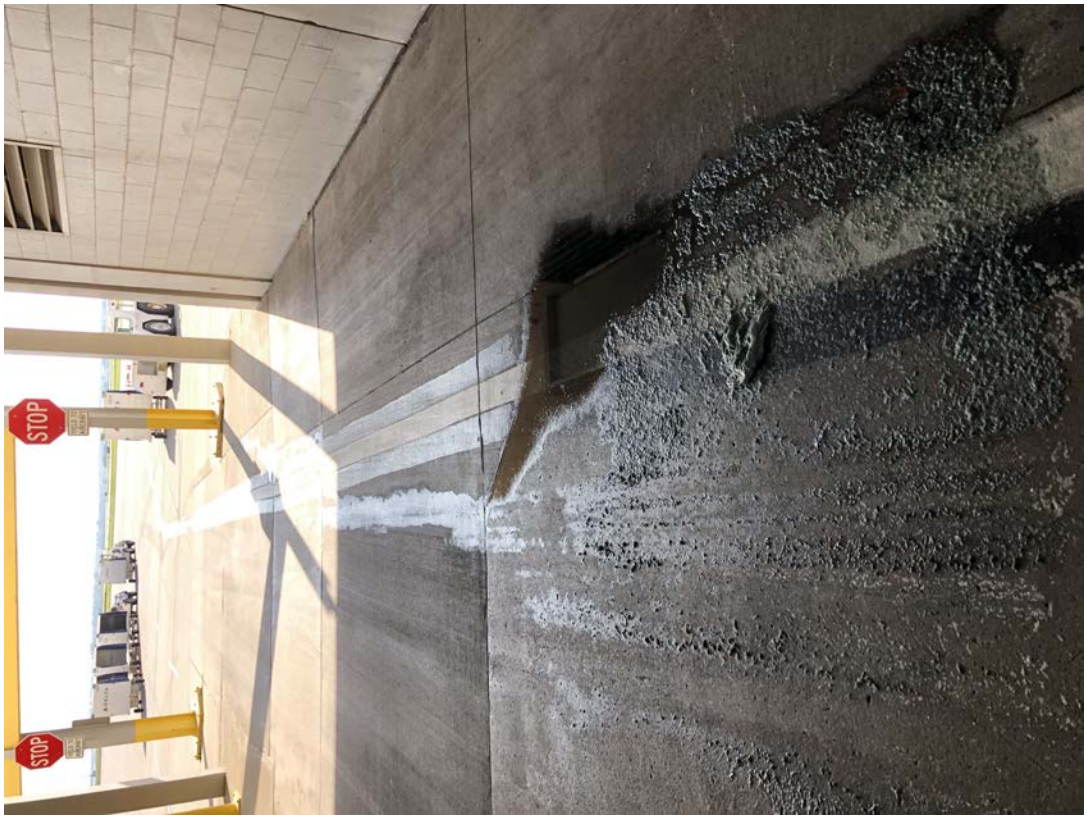
ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | 08/03/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | |

## MAP

## ATTACHMENTS


STOP
STOP

# Airport Operations

Log Entered 8/19/2019 13:16 PM Entered By Nick Everhart

Event Date/Time 8/19/2019 11:50 AM

## HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 8/19/2019 11:50 | Location: | Other |
| Material Released: | Lavatory Waste | Amount (gallons): | 5 |
| Equipment Involved: | | Cause: | |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | Other (List Below) |
| Name: | Unknown | Badge #: | |

METAR: KDSM 191720Z 11007KT 10SM FEW029 SCT250 26/18 A3003 RMK AO2 T02560178

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required):

During a routine ramp inspection lavatory waste was observed all around the opening of the triturator in the triturator room. Upon review of the footage a Delta tug and cart can be observed dumping lavatory waste and missing the opening completely. The Delta employee left the mess without cleaning it up. DGS operations was called and advised they need to clean the mess up. The mess was cleaned within an hour.

Footage will be added later.

Location (map):

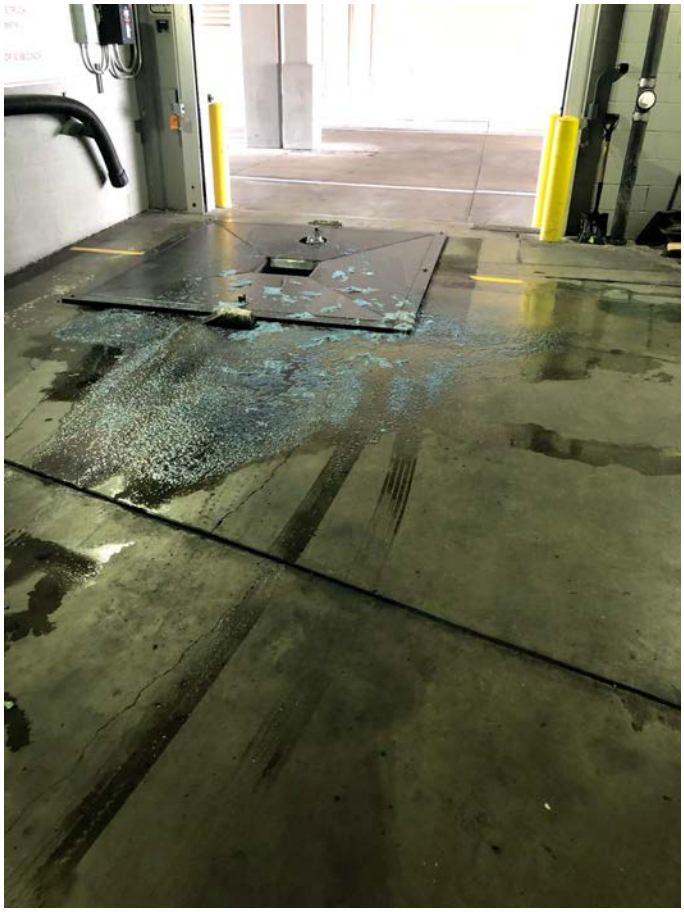
Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | 08/19/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | |

## ATTACHMENTS



# Airport Operations

Log Entered 9/08/2019 8:26 AM Entered By Nick Everhart

Event Date/Time 9/08/2019 8:20 AM

## HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 9/8/2019 08:20 | Location: | A3 |
| Material Released: | Lavatory Waste | Amount (gallons): | 3-5 |
| Equipment Involved: | Lav Cart | Cause: | Equipment Failure |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | Southwest |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | Other (List Below) |
| Name: | | Badge #: | |

METAR: KDSM 081254Z 11007KT 10SM FEW007 FEW025 BKN055 OVC180 17/15 A3000 RMK AO2 SLP156 T01720150

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required): During a routine ramp inspection lavatory waste/fluid could be seen leaking from the Southwest lav cart. Southwest employee, Troy was advised of the leak. Troy stated they will clean up the spill and ensure the cart gets repaired. No storm drains were compromised as a result of the spill.

Location (map):

Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | 09/08/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | |

## MAP

## ATTACHMENTS

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 09/14/2019 07:55 | Entered By | Nick Everhart |
| Event Date/Time | 09/14/2019 07:55 | | |

## HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 9/14/2019 07:55 | Location: | SOUTH CARGO |
| Material Released: | Jet A | Amount (gallons): | 10 |
| Equipment Involved: | FedEx aircraft | Cause: | Tank Overfill |
| ARFF Response: | Yes | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | Fedex |
| Aircraft Involved: | Yes | Tail Number: | N668FE |
| Responsible Company: | Signature Flight Support | Cleaned By: | Signature Flight Support |
| Name: | Chris Nelson | Badge #: | 26124 |

METAR: KDSM 141254Z 16005KT 10SM FEW100 BKN250

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required):

The operations center was advised by Fedex that a fuel spill had occurred on the FedEx ramp while fueling N668FE. The fuel spill was described as 7" - 8" wide and 20 feet long. The caller said it is at the request of Mike and or BJ from Signature. One of the fuel tanks had been over fueled causing the fuel to flow out of the overfill port on the right wing. Signature immediately contained the fuel spill using absorbent and manually drained fuel out of the surge/overflow tank. ARFF was advised that the spill had been contained as soon as OPS 7 had made seen. The used absorbent was cleaned up and disposed of by Signature within an hour of the spill occurring

Location (map):

Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

# Airport Operations

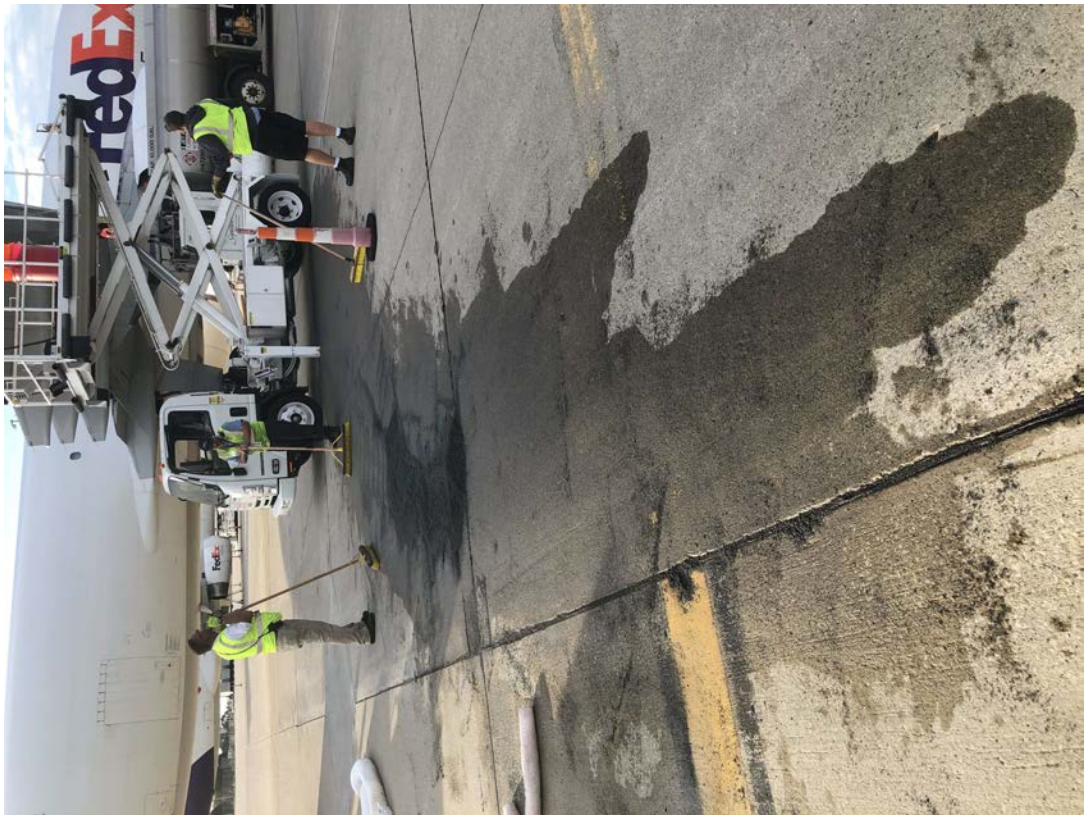
## ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 09/14/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | | |

## MAP

ATTACHMENTS

1



# Airport Operations

Log Entered 09/15/2019 22:10 Entered By Christian Kloster

Event Date/Time 09/15/2019 22:10

## HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 9/15/2019 16:45 | Location: | Other |
| Material Released: | Gasoline | Amount (gallons): | 2 |
| Equipment Involved: | Pump | Cause: | Human Error |
| ARFF Response: | Yes | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | Suspected Enterprise |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | Other (List Below) |
| Name: | Christian Kloster | Badge #: | 21426 |

METAR:

METAR KDSM 151654Z 28005KT 10SM FEW250 28/21 A2998 RMK AO2
SLP145 T02780211=

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required):

Ops responded to the RAC on the west side (pump T208) alongside the BEO for a purported fuel spill. BEO Mike Auch arrived first at approx. 1630 to find fuel streaming from the base of pump 208 on the west side of the RAC facility. Mr Auch immediately utilized the emergency fuel shut off button located on the side of the building to stop the flow of gasoline which had grown beyond 10 feet on the ground and by my estimate was around 2-3 gallons. I requested ARFF to respond and stand by as required and for safety as it was being stopped and recovered using the spill kit at the RAC.

ARFF arrived and assisted with addidtional materials to help clean up the spill. Ops 7 took 2 bags full of HAZMAT material to FM and disposed of them in the proper HAZMAT cans outside by the bays for extraction. ARFF approved of the clean up methods and that the area was clear of any hazardous materials and departed the area.

Tony Howard had been notified and dispatched mechanic Chris Kuonen in during the clean up efforts, Mr Kuonen arrived and investigated several possibilities for the failure of the pump to not shut off when it began leaking. Initially he thought it was a bad o-ring and replaced it, but upon further investigation he surmised that someone must have broken the quick disconnect and then re-connected it causing the inner pipes to jostle and move the ring which in turn caused the leak. When he tested the pump it took some time for the fuel to flow through to the pump handle which was indicative of the disconnect theory.

I passed this information on to Rand, the Enterprise manager, and asked him to have his employees call us when these things happen so a more thorough inspection can take place. He understood and assured me he would speak to them. I asked John Madison in the Ops Center to inspect footage to try and ascertain who could have broken the pump handle when he had time.

Approximately 35 min later Rand from Enterprise called back to report that one of his employees drove off and broke a pump handle in 209. Chris Kuonen was still on site working on T Hangar 53 so he responded and re-connected.

Location (map):

Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

## ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 09/15/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | | |

## MAP

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 09/17/2019 09:24 | Entered By | Craig Stephens |
| Event Date/Time | 09/17/2019 09:24 | | |

## HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 9/16/2019 20:24 | Location: | Other |
| Material Released: | Hydraulic Fluid | Amount (gallons): | 10 |
| Equipment Involved: | Car transport trailer | Cause: | Equipment Failure |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | Hertz |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | Other (List Below) |
| Name: | | Badge #: | |

METAR:

KDSM 170454Z 12007KT 10SM CLR 24/21 A3003 RMK AO2 SLP159 T02440211
KDSM 170354Z 12007KT 10SM FEW230 FEW300 26/21 A3003 RMK AO2 SLP159 T02560211

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required):

Ops 7 was notified by FM Manager Tony Howard of a unknown spill that was being cleaned with oil dry along Frontage Rd in front of Economy Parking Lot 5.

Spill area measures: North lane 9'X85' - South lane 5'X30'

Responded to the site and met with Hulcher Services, Inc. representative, Robert Villa, 3821 N. Skiles Ave. Kansas City, MO 64161 p: (816) 454-7774.
He stated he was dispatched at 2100 yesterday to clean hydraulic fluid on the frontage road resulting from a ruptured hydraulic hose line on a car transporter trailer. The transporter company is United Road, 10701 Middlebelt Road, Romulus, MI 48174, (800) 221-5127. The driver did not provide his name and was not forth coming with information. The Unit number on the tractor is 10060. The transport was retrieving cars from Hertz Car Rental.

When Robert arrived at 3:30 am, he and his co-worker applied oil dry to the road surfaces. When most all of the hydraulic fluid was soaked into the oil dry, they then swept the product into 1) 55 gallon steel drum. The drum was placed on the East side of the Hertz office at the RAC Facility. I made contact with Hertz manager, Robert, 515-333-2161, to ask if he was aware of the incident, which he was not, and to inform him the barrel would be placed at his location for pickup by a company under contract with Hulcher Services.

Location (map):

Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

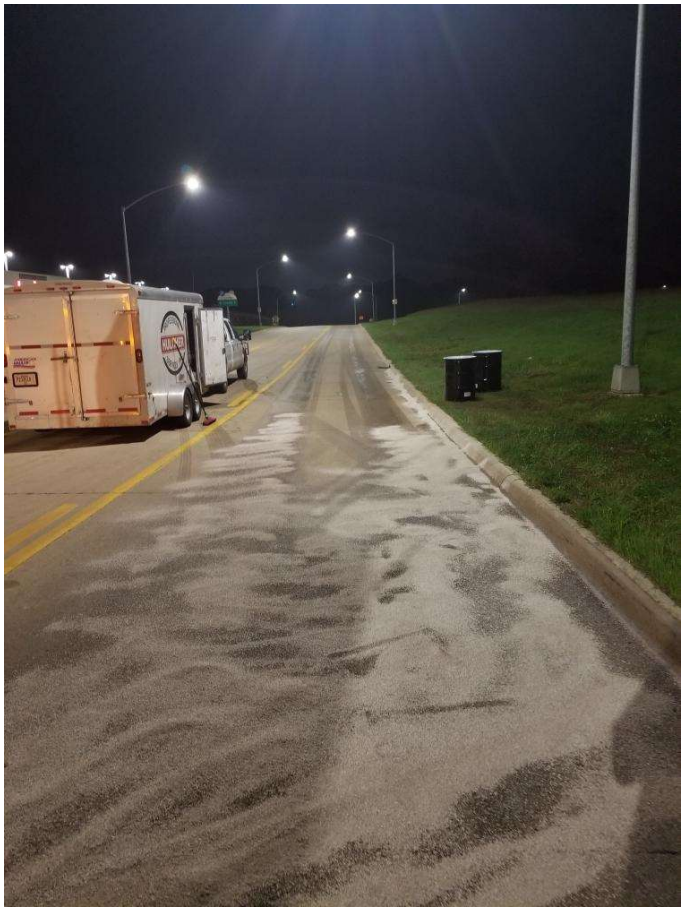
## ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | | |

## MAP

## ATTACHMENTS

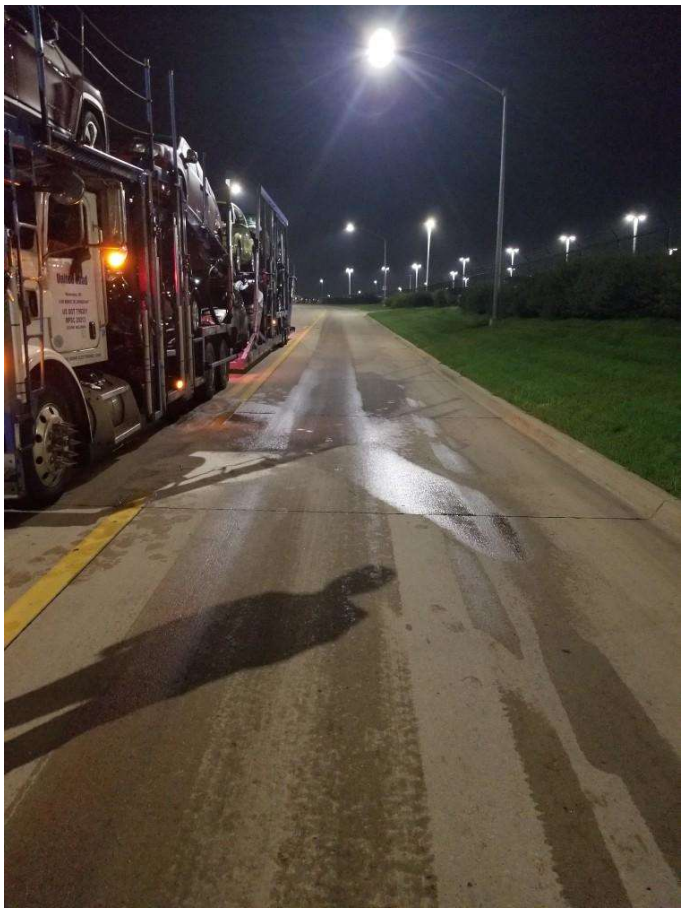
09-17-19 hydraulic spill (4)



09-17-19 hydraulic spill (6)

09-17-19 hydraulic spill (7)

09-17-19 hydraulic spill (1)



09-17-19 hydraulic spill (2)


09-17-19 hydraulic spill (3)

09-17-19 hydraulic spill (5)

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 09/24/2019 07:59 | Entered By | Nick Everhart |
| Event Date/Time | 09/24/2019 07:59 | | |

HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 9/24/2019 07:59 | Location: | Other |
| Material Released: | Diesel Fuel | Amount (gallons): | 2 |
| Equipment Involved: | Unknown | Cause: | Unknown |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | DMAA Maintenance |
| Name: | | Badge #: | |

METAR: KDSM 241254Z 18009KT 10SM BKN230 BKN280

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required):

OPS 7 observed a diesel fuel spill at the vehicle gate 5 pumps. Upon review of the video footage it could not be determined who the responsible party was. The spill was cleaned and disposed of by DMAA maintenance.

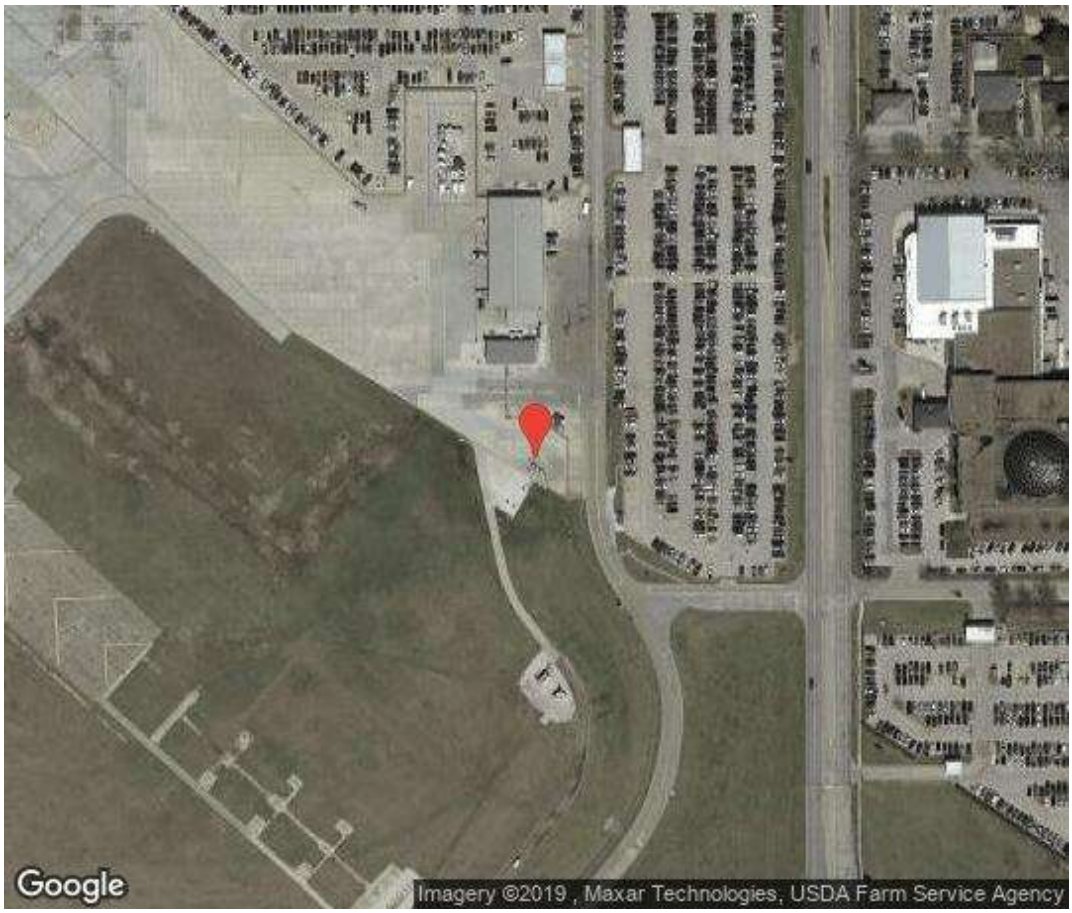
Location (map):

Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

## ROUTING CHECKLIST

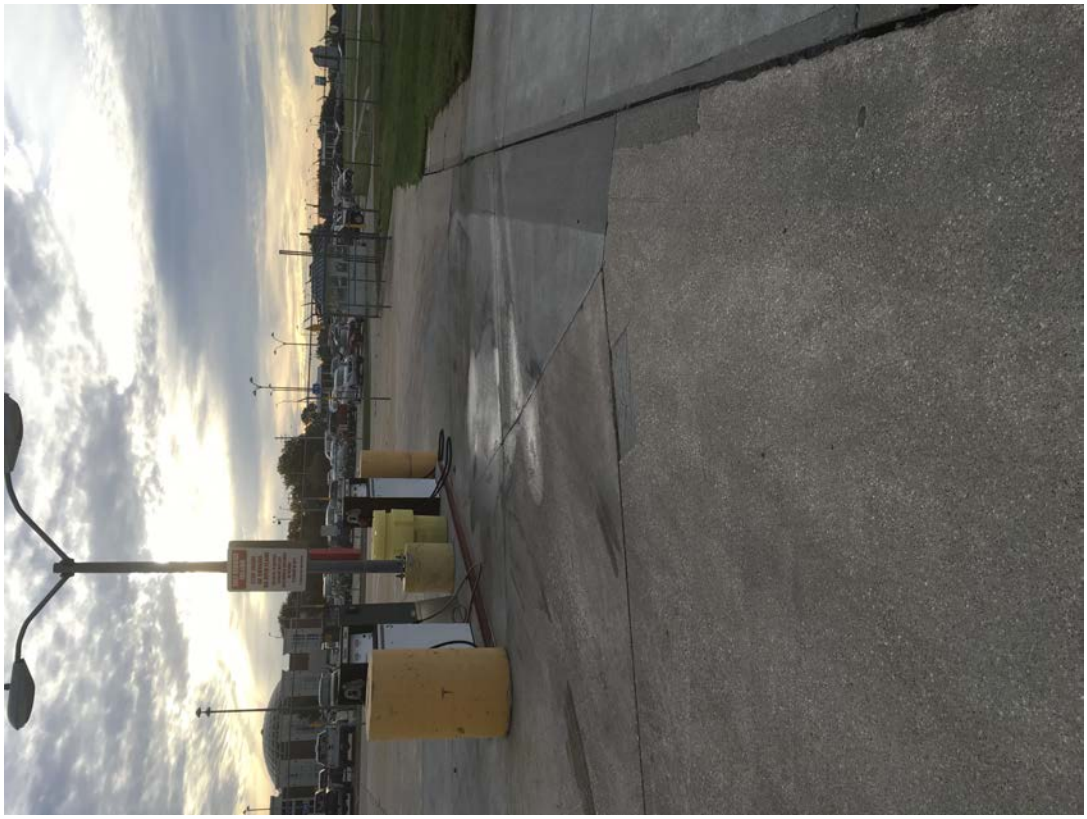
| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 09/24/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | | |

## MAP



ATTACHMENTS

1



# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 09/26/2019 04:37 | Entered By | Christian Kloster |
| Event Date/Time | 09/26/2019 04:37 | | |

## HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 9/26/2019 00:30 | Location: | Other |
| Material Released: | Lavatory Waste | Amount (gallons): | 1/2 |
| Equipment Involved: | Lav cart/hose | Cause: | Human Error |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | Envoy |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | Other (List Below) |
| Name: | | Badge #: | |

METAR:

252254Z 31013KT 10SM BKN100 BKN250 19/08 A2990
RMK AO2 SLP121 T01940078 $=

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required):

I arrived to inspect the triturator room at approximately 0045 and instantly noticed that there was a large spill coming from underneath the OVHD entry door (which was closed). I stepped into the room itself and found that other than a slight odor it was fairly clean. I stepped out onto the drive lane through the entry door and instantly noticed a strong odor of human waste material. The pavement was wet with material and toilet paper and was pooling in many places. Based on the evidence it appeared to be a human waste HAZMAT issue, I requested the Ops Center run footage on who was responsible so they could return to begin clean-up. The Ops Center discovered that it was an Envoy employee who stood at the entryway and used the hose to spray material out onto the drive lane. I called and asked the Envoy supervisor to meet me at the triturator room to show him the spill and to get assistance with clean-up. The Envoy supervisor knew who was responsible for the mess and informed me that he had gone home, he had no personnel to assist in cleaning up the HAZMAT. I told him that if he was unable my only alternative would be to call FM for assistance and that there was a possibility it could be billed. He understood and accepted that the airport would clean the mess. I called Shawn Larson w/FM and he brought two additional workers to apply absorbent material and extract the HAZMAT from the pavement. The process took approx. 45 minutes and the HAZMAT was properly disposed of awaiting removal at FM.
Video can be found at the following location- P:\WORKING\2019\OPS\Incidents\Images\09 SEP\9-26 Trit Room Mess

*work order 509731 issued for FM/Ops Supv work

Location (map):

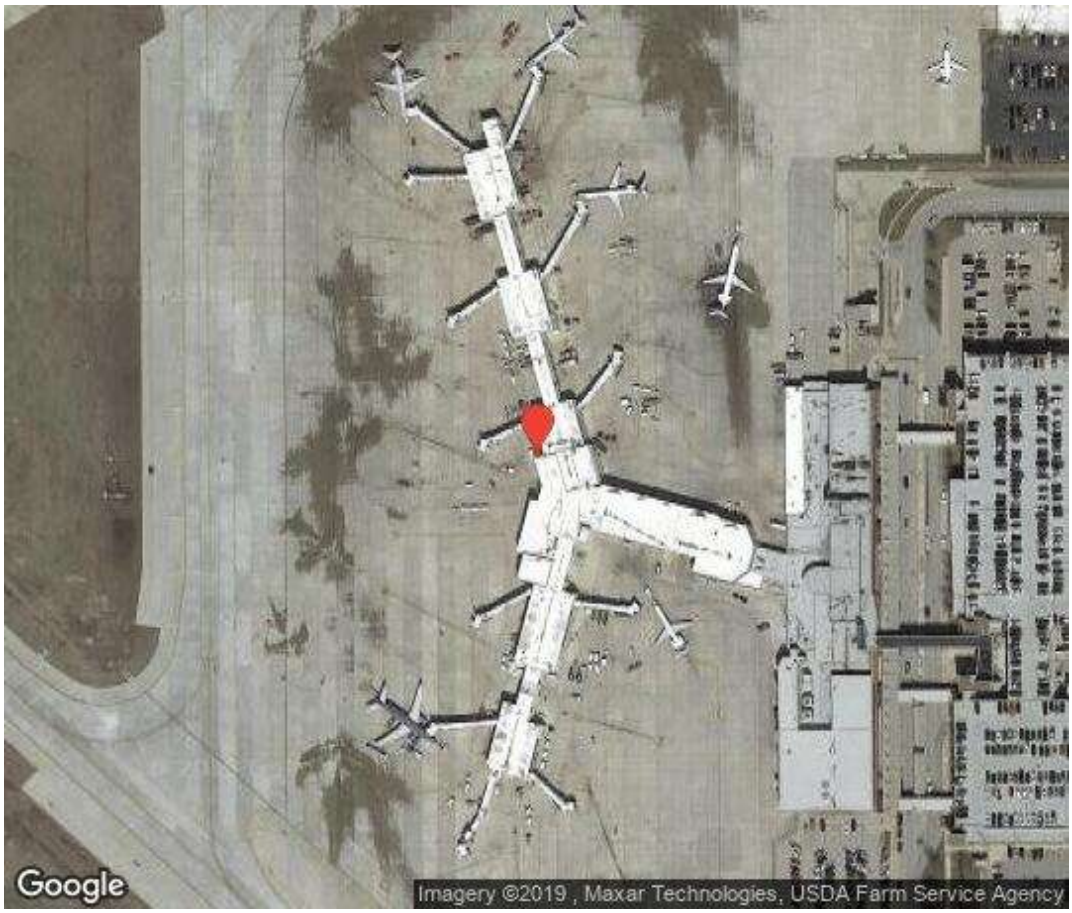
Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

# Airport Operations

## ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 09/26/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | | |

## MAP



# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 09/28/2019 19:30 | Entered By | William Brenny |
| Event Date/Time | 09/28/2019 19:30 | | |

HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 9/28/2019 19:30 | Location: | C1 |
| Material Released: | Lavatory Waste | Amount (gallons): | 15 |
| Equipment Involved: | Lav tug | Cause: | Unknown |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | DGS Delta |
| Aircraft Involved: | Yes | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | Other (List Below) |
| Name: | | Badge #: | |
| METAR: | | | |

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required):

DGS Delta was observed at 2336 on 9/27/19 servicing their aircraft at C1. During lav servicing a spill took place, the cause is unknown at this time.
DGS staff are observed attempting to clean the spill for over 20 minutes (unknown as to how the spill was cleaned).

At 0010 on 9/28/19 - a DGS employee is seen dumping 2 - 5 gallon buckets of water over where the spill had occurred.

Ops was not notified that the spill took place, found during ramp inspection at 1745 on 9/28/19.

Location (map):

Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

## ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 09/28/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | | |

## MAP

## ATTACHMENTS

Spill at C1

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 09/28/2019 17:42 | Entered By | William Brenny |
| Event Date/Time | 09/28/2019 17:42 | Days Open | 0 |

## Ramp Inspection

Date 9/28/2019 17:42 Supervisor: William Brenny

### Fire Safety

| | | |
|---|---|---|
| Extinguisher Not Obstructed | | |
| Extinguisher Located at Each Gate | | |
| Emergency Exits Clean / Unobstructed | | |
| No Evidence of Smoking | | |

### HAZMAT Spills

| | | |
|---|---|---|
| Triturator / Cleanliness / Debris | Unsatisfactory | |
| No Evidence of Fuel Spills | | |
| Deicing Fluid w/ in Blue Lines | | |

### Pavement / FOD / Tenant Areas / Markings

| | | |
|---|---|---|
| No Cracks / Holes / Loose Aggregate | | |
| Dumpster Areas Clean / No Debris | | |
| No Unauthorized Equip. Storage | | |
| GSE and Tow Bar Parking / Maint. | | |
| Lead In Lines / Stop Bar Labels Legible | | |
| Building Exterior / Ramp Lights | | |

### Security

| | | |
|---|---|---|
| SIDA Badges Displayed | | |
| Vehicle Permits Displayed | | |
| No Unsecured Doors | | |

### Remarks

Add Remarks then submit hazardous conditions to SMS ->

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 10/01/2019 04:38 | Entered By | Christian Kloster |
| Event Date/Time | 10/01/2019 04:38 | | |

HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 10/1/2019 00:51 | Location: | Other |
| Material Released: | Lavatory Waste | Amount (gallons): | 4 |
| Equipment Involved: | Lav Cart | Cause: | Human Error |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | Envoy |
| Aircraft Involved: | No | Tail Number: | N/A |
| Responsible Company: | Other (List Below) | Cleaned By: | Other (List Below) |
| Name: | | Badge #: | |

METAR:

010054Z 19008KT 10SM FEW200 SCT250 27/21 A2982
RMK AO2 SLP091 T02670211=

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required):

During my ramp inspection I noticed an odor as I drove under the stem, (my window was down), I looked over towards the triturator room drive lane and noticed a large spill. When I investigated it was apparent that it was human waste material from a lav cart. I placed orange cones in the drive lanes to keep vehicles from driving through and requested video from the ops center in order to find the party responsible.

The Ops Center called back a short time later with the information that Envoy was responsible for the spill. The unknown individual was simply negligent in his duties and spilled material from his cart as he backed out and drove away. I called the Envoy supervisor (Christian) and he responded with another employee to assess. They began clean-up efforts while I went to FM to retrieve bags of floor dry to assist. I returned with 2.5 bags of floor dry and helped them clean up for the next 40 min. All of the material was extracted and placed in a trash bag. The bag was taken to FM to be removed as HAZMAT material. No HAZMAT material reached an outside drain of any kind.

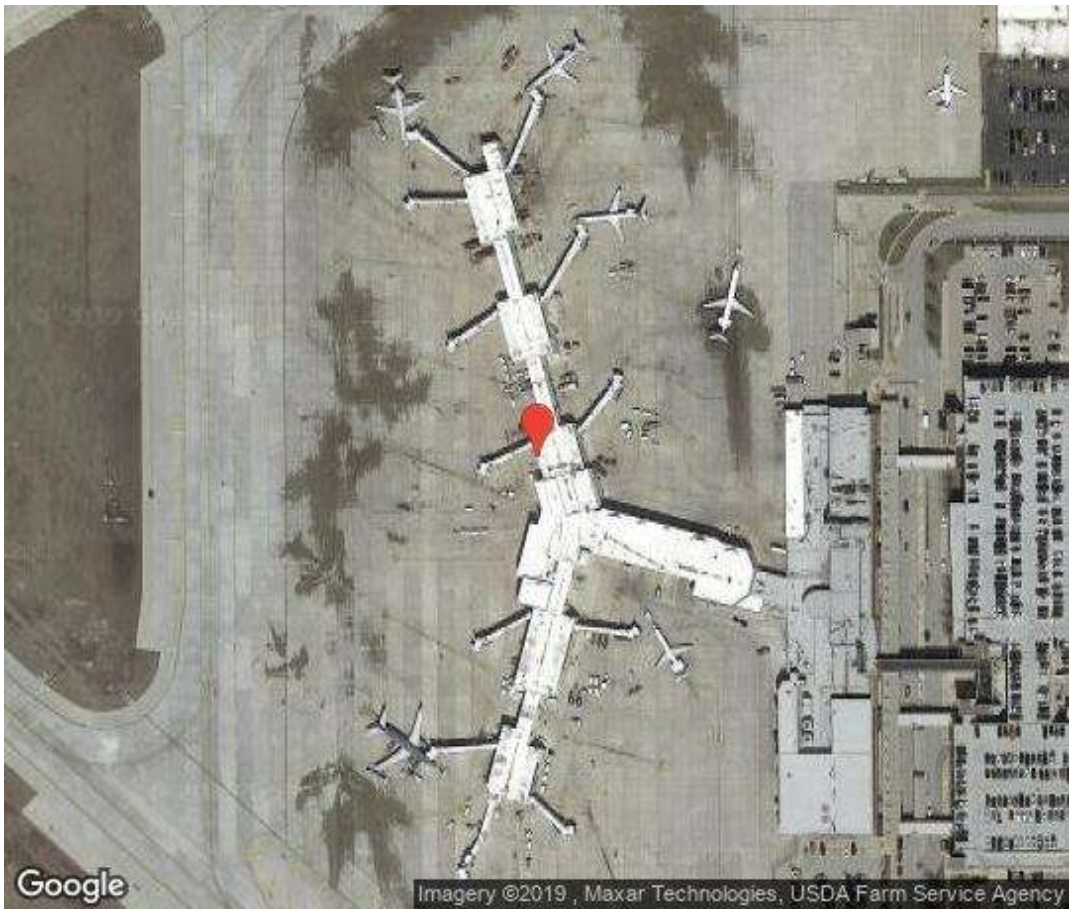
Location (map):

Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

## ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 10/01/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | | |

## MAP



## ATTACHMENTS

pic4


pic1

pic2

pic3


HONK
BEFORE
ENTERING

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 10/01/2019 04:33 | Entered By | Christian Kloster |
| Event Date/Time | 10/01/2019 04:33 | Close Date | 10/01/2019 05:58 |

Ramp Inspection

Date 10/1/2019 01:15 Supervisor: Christian Kloster

## Fire Safety

| | | |
|---|---|---|
| Extinguisher Not Obstructed | Satisfactory | |
| Extinguisher Located at Each Gate | Satisfactory | |
| Emergency Exits Clean / Unobstructed | Satisfactory | |
| No Evidence of Smoking | Satisfactory | |

## HAZMAT Spills

| | | |
|---|---|---|
| Triturator / Cleanliness / Debris | Unsatisfactory | See comments- HAZMAT |
| No Evidence of Fuel Spills | Satisfactory | |
| Deicing Fluid w/ in Blue Lines | Not Applicable | |

## Pavement / FOD / Tenant Areas / Markings

| | | |
|---|---|---|
| No Cracks / Holes / Loose Aggregate | Satisfactory | |
| Dumpster Areas Clean / No Debris | Satisfactory | |
| No Unauthorized Equip. Storage | Satisfactory | |
| GSE and Tow Bar Parking / Maint. | Satisfactory | |
| Lead In Lines / Stop Bar Labels Legible | Satisfactory | |
| Building Exterior / Ramp Lights | Satisfactory | |

## Security

| | | |
|---|---|---|
| SIDA Badges Displayed | Satisfactory | |
| Vehicle Permits Displayed | Satisfactory | |
| No Unsecured Doors | Satisfactory | |

## Remarks

During my ramp inspection I noticed an odor as I drove under the stem, (my window was down), I looked over towards the triturator room drive lane and noticed a large spill. When I investigated it was apparent that it was human waste material from a lav cart. I placed orange cones in the drive lanes to keep vehicles from driving through and requested video from the ops center in order to find the party responsible.

The Ops Center called back a short time later with the information that Envoy was responsible for the spill. The unknown individual was simply negligent in his duties and spilled material from his cart as he backed out and drove away. I called the Envoy supervisor (Christian) and he responded with another employee to assess. They began clean-up efforts while I went to FM to retrieve bags of floor dry to assist. I returned with 2.5 bags of floor dry and helped them clean up for the next 40 min. All of the material was extracted and placed in a trash bag. The bag was taken to FM to be removed as HAZMAT material. No HAZMAT material reached an outside drain of any kind.

Add Remarks then submit hazardous conditions to SMS ->

ATTACHMENTS

pic1


pic2


pic3

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 10/08/2019 05:39 | Entered By | Christian Kloster |
| Event Date/Time | 10/08/2019 05:39 | | |

HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 10/8/2019 03:45 | Location: | Other |
| Material Released: | Diesel Fuel | Amount (gallons): | 2.5 |
| Equipment Involved: | Lighted X-engine | Cause: | Equipment Failure |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | DMAA |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | DMAA Maintenance | Cleaned By: | DMAA Maintenance |
| Name: | | Badge #: | |

METAR:

```
METAR KDSM 080354Z 17006KT 10SM CLR 11/06 A3016 RMK AO2 SLP211
      T01110056=
```

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required):

Ops 7 discovered the diesel spill while conducting an inspection of the asphalt grooving project on RWY 23. I noticed a wet area under the lighted X as the lights from the truck washed over the area, upon further inspection I discovered one of the fuel hoses had split and was spraying diesel fuel on the pavement. I immediately shut down the engine and notified FM to bring out quick dry to begin the clean up process. The spill was extracted and bagged, the bags were placed in the proper receptacles at FM to be removed by a HAZMAT contractor.

The spill was contained and did not reach a drain of any kind. Work order 509902 issued for repair, no precipitation was falling.

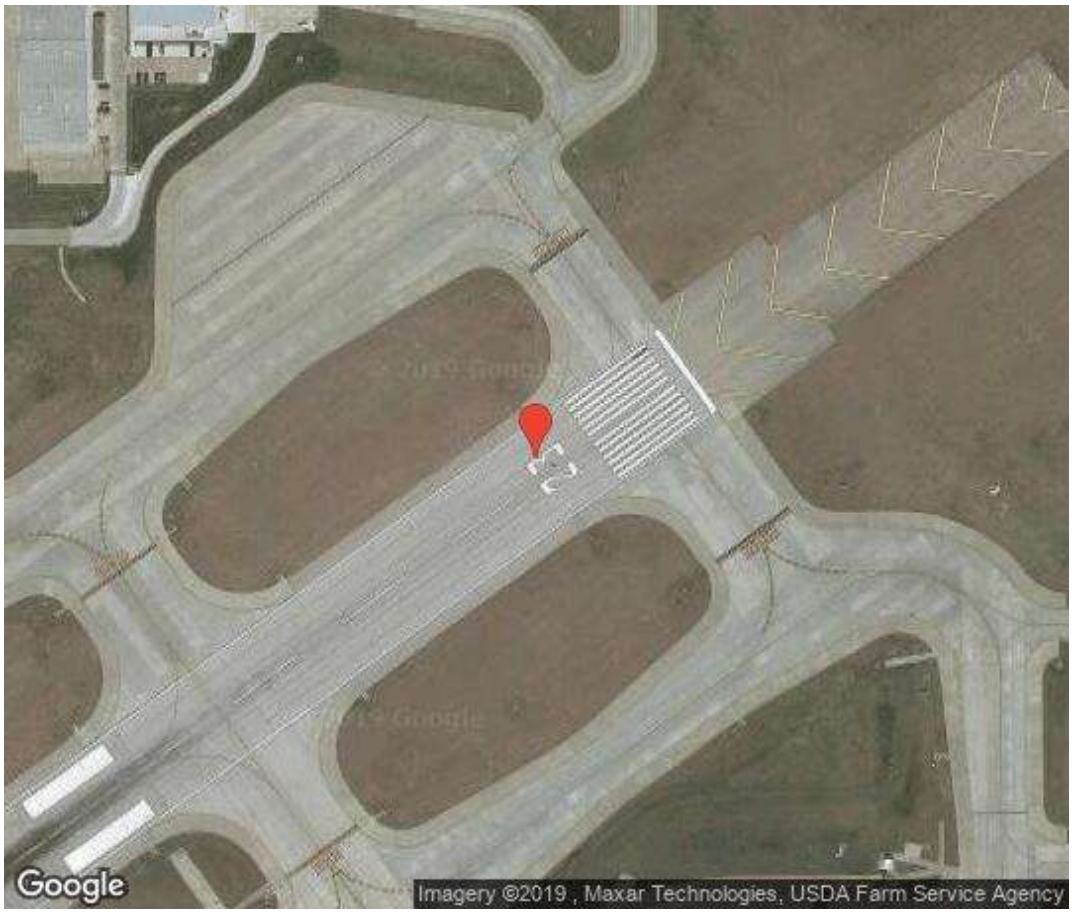
Location (map):

Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

## ROUTING CHECKLIST

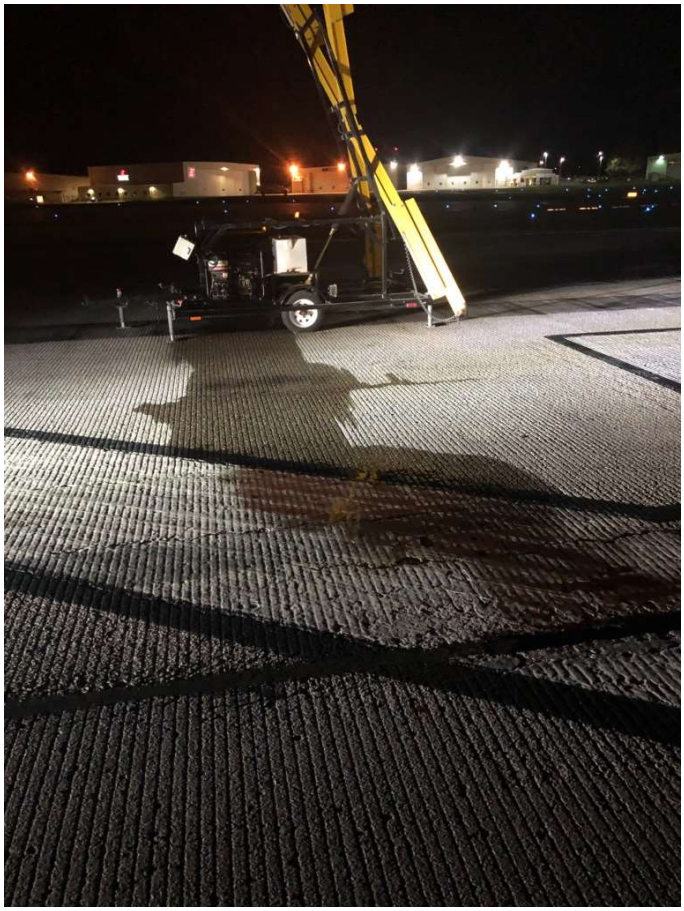
| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 10/08/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | | |

## MAP



## ATTACHMENTS

pic1



pic2

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 10/09/2019 17:58 | Entered By | William Brenny |
| Event Date/Time | 10/09/2019 17:58 | | |

## HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 10/9/2019 17:58 | Location: | Other |
| Material Released: | Diesel Fuel | Amount (gallons): | 4 |
| Equipment Involved: | | Cause: | Unknown |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | Other (List Below) | Cleaned By: | DMAA Maintenance |
| Name: | | Badge #: | |
| METAR: | | | |

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required):

Spill found at the Diesel pump near VG5 during perimeter inspection. Unknown cause.

See attached photo.

Location (map):

Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

## ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | | |

## ATTACHMENTS

Spill

| | | | |
|---|---|---|---|
| Log Entered | 10/09/2019 12:51 | Entered By | Mike Richardson |
| Event Date/Time | 10/09/2019 12:51 | Close Date | 10/09/2019 13:07 |

Perimeter Inspection

## Perimeter and Public Protection Inspection

| | | | |
|---|---|---|---|
| Inspection Started: | 10/09/2019 12:53 | Inspection Completed: | 10/09/2019 13:07 |
| Perimeter Type: | Inner Perimeter | Conducted By: | DMPD |
| All Gates Checked: | Yes | Unsecured Gates: | No |
| Fenceline Secure: | Yes | Signs In Place: | Yes |
| Fuel Farm Secure: | Yes | Wildlife Hazards: | No |
| Unauthorized Activity: | Yes | | |

Discrepancies or Remarks

Create Work Order for inoperable gates, unsecure fecneline, and missing or damaged signs posted to prevent unauthorized access to the airfield. Take appropriate action for unauthorized personnel or vehicles on the AOA.

Report unsecured gates or fenceline and the presence of unauthorized personnel or vehicles to the ASC *and* the Operations Manger. These should also be reported to SMS.

| | | | |
|---|---|---|---|
| Wildlife Report: | | Security Deviation: | |

# Airport Operations

| | | | |
|---|---|---|---|
| Log Entered | 10/14/2019 05:42 | Entered By | Nick Everhart |
| Event Date/Time | 10/14/2019 05:42 | | |

HAZMAT SPILL

| | | | |
|---|---|---|---|
| Incident Time: | 10/14/2019 05:42 | Location: | Other |
| Material Released: | Diesel Fuel | Amount (gallons): | 2-3 |
| Equipment Involved: | Unknown | Cause: | Unknown |
| ARFF Response: | No | Injuries Reported: | No |
| Entered Storm Drain: | No | Tenant: | |
| Aircraft Involved: | No | Tail Number: | |
| Responsible Company: | DMAA Maintenance | Cleaned By: | DMAA Maintenance |
| Name: | Unknown | Badge #: | |
| METAR: | | | |

Send All HAZMAT Reports to SMS | Link Related Forms

Summary (required):

During a routine perimeter inspection 2-3 gallons of diesel fuel was observed at the VG 5 fuel pumps. The spill was cleaned with oil dry and disposed of appropriately by field maintenance. No video footage could be found of the incident.

Location (map):

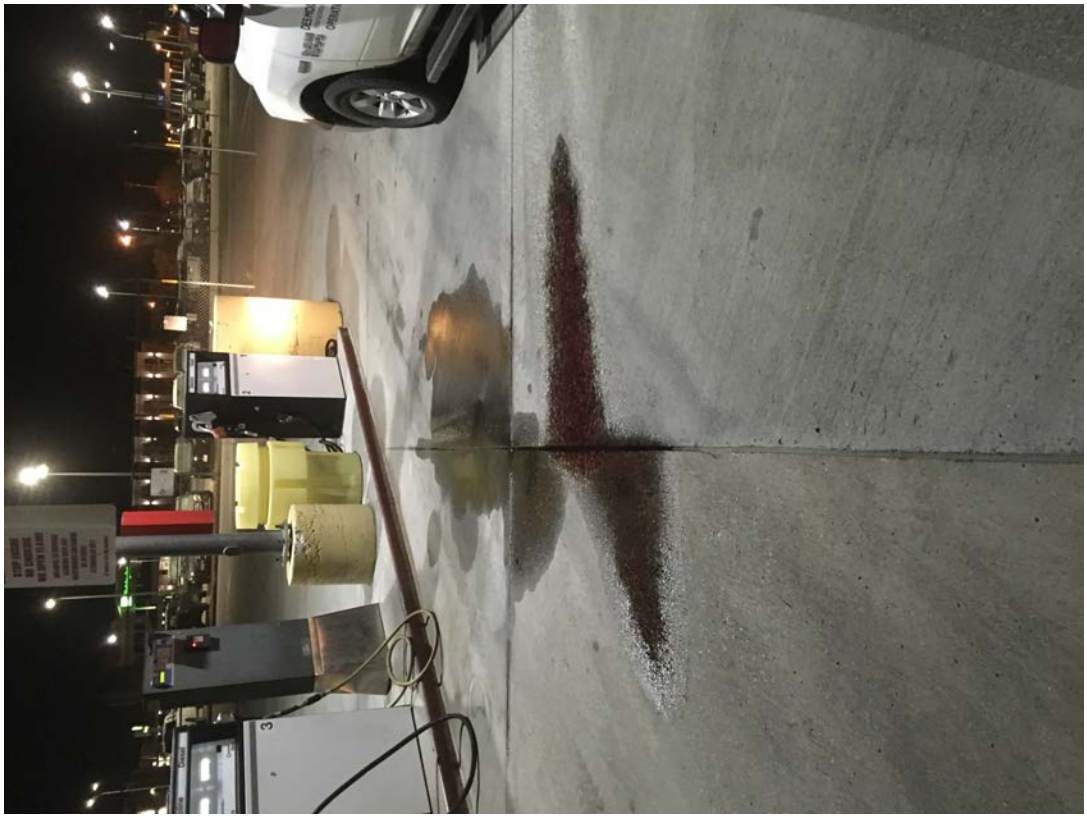
Notify ARFF if FUEL spill is greater than 10 feet in any direction, 50 square feet in area, or is continously flowing

## ROUTING CHECKLIST

| Step Description | User | Due Date | Notes | Completion Date |
|---|---|---|---|---|
| Send Completed Report to Ops Manager | Jeremy Owings | 01/01/1900 | | 10/14/2019 |
| Send Completed Report to Engineering Dept | Cole Steffes | 01/01/1900 | | |

## ATTACHMENTS

1



# Appendix H

# Best Management Practices

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

# SR1 EMERGENCY SPILL CLEANUP PLANS

PURPOSE:

Prevent or reduce the discharge of pollutants to storm water resulting from petroleum products or other materials.

**GENERAL APPROACH:**

Owners and operators of facilities that store, process, or refine oil or oil products may be required by federal law (40 CFR 112) to develop and implement a Spill Prevention Control and Countermeasure (SPCC) Plan. Emergency spill cleanup plans should include the following information:

- A description of the facility including the owner's name and address, the nature of the facility activity, and at the general types and quantities of chemicals stored at the facility.
- A site plan showing the location of storage areas for chemicals, the location of storm drains, site drainage patterns, fire water source locations, and the location and description of any devices used to contain spills such as positive shut-off control valves.
- Notification procedures to be implemented in the event of a spill, such as key company personnel and local, state, and federal agencies.
- Instructions regarding cleanup procedures.
- Designated personnel with overall spill response cleanup responsibility.

**APPROACH TO EXISTING FACILITY ACTIVITIES:**

**Operational Considerations**

- Post a summary of the plan at appropriate site locations, identifying the spill cleanup coordinators, location of cleanup equipment, and phone numbers of regulatory agencies to be contacted in the event of a spill.
- Maintain an inventory of appropriate cleanup materials on-site and strategically deploy cleanup materials based on the type and quantities of chemicals present.
- Make absorbent readily available in fueling areas.

***Contingency Response***

- Perform the following notifications in the event of a spill:
  - Fire Department
  - Local Health Department
  - State Office of Emergency Services
  - National Response Center - if spill exceeds reportable quantity (RQ).
- Containment and cleanup of spills shall begin immediately.

**TARGETED ACTIVITIES**

- Aircraft/Vehicle/ Equipment Maintenance
- Aircraft/Vehicle/Equipment Fueling
- Aircraft/Vehicle/Equipment Washing
- Cargo Handling
- Fuel/Chemical Storage
- Equipment Degreasing

**TARGETED POLLUTANTS**

- Fuel
- Vehicle Fluids/Oils
- Solvents/Cleaning Solutions
- Pesticides/Herbicides/ Fertilizers
- Battery Acid

**KEY APPROACHES**

- Develop/implement SPCC, if required
- SPCC implementation training
- Immediate containment/ cleanup of spills
- Availability of spill response equipment/materials
- Required agency notification

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

| SR1 | EMERGENCY SPILL CLEANUP PLANS |
|---|---|

***Inspection and Training***

- Provide formal training in plan execution to key personnel, with additional training for first responder level personnel (29 CFR 1910.120). All employees should have basic knowledge of spill control procedures.

**REQUIREMENTS:**

- Capital and O&M costs should be small to moderate depending on the types and quantities of chemicals stored on-site.
- Maintenance costs include periodic training and equipment replacement.

**LIMITATIONS:**

- Spills occurring after work hours in confined areas may go undetected, affecting off-site areas.

**RELEVANT RULES AND REGULATIONS:**

.FR Vol. 60, No. 189, Sept. 25,1995 Multi-Sector Storm Water General Permit
.40 CFR 110.3 Discharge of Oil
.40 CFR 112 Oil Pollution Prevention (SPCC/OPA Plan)
.40 CFR 117.3 Determination of Reportable Quantities for a Hazardous Substance
.40 CFR 122-124 NPDES Regulations for Storm Water Discharges

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

# SC1 — ELIMINATION OF NON-STORM WATER DISCHARGES TO STORM DRAINS

**PURPOSE:**

***Existing discharges:*** Eliminate non-storm water discharges to the storm water collection system. Non-storm water discharges can be classified as follows: 1) Activity-based (subtle), and 2) Overt (hard pipe connection). Activity-based non-storm water discharges may include: wash water, deicing fluids, and spillage. Overt non-storm water discharges may include: process wastewater, treated cooling water, and sanitary wastewater.

***Prevention of illicit connections:*** Prevent improper physical connections to the storm drain system from sanitary sewers, floor drains, industrial process discharge lines, and wash racks through education, developing project approval conditions, and performing both construction phase and post-construction inspections.

**GENERAL APPROACH:**

***Identification of Activity-Based (Subtle) Discharges:***

The following techniques may be used to identify activity-based non-storm water discharges to the storm water collection system:

- Perform frequent activity inspections to identify non-storm water discharges - stagger inspection times to cover all work periods.
- Perform visual inspections of discharge points to the storm drain system - observe uncharacteristic volumes, colors, turbidity, odors, deposition, staining, floatables, and foaming characteristics of any flow.

**APPROACH TO FUTURE FACILITIES AND UPGRADES:**

***Design of New Facilities and Existing Facility Upgrades***

- Perform inspections during the design review and project construction phases to ensure drainage, wastewater, and water supply connections are correct (no cross connections or illicit hookups).
- Develop a set of as-built prints for all projects. Keep a set of the prints at the facility.
- Design projects to include adequate waste repositories at locations near waste origin points.
- Provide adequate and appropriately designed facilities for functions such as steam cleaning, degreasing, painting, mechanical maintenance, chemical/fuel storage and delivery, material handling, waste handling and storage, lavatory service, and food preparation.

**TARGETED ACTIVITIES**

- All Maintenance
- All Fueling
- All Washing
- Equipment Cleaning
- Cargo Handling
- All Storage
- Painting/Stripping
- Floor Washdowns
- Aircraft Deicing/Anti-Icing
- Garbage Collection
- Aircraft Lavatory Service
- Fire Fighting Equip. Testing
- Potable Water System Flush
- Runway Rubber Removal

**TARGETED POLLUTANTS**

- Oil and Grease
- Vehicle Fluids
- Fuel
- Solvents/Cleaning Sol.
- Deicing/Anti-Icing Fluid
- Battery Acid
- Pesticides/Herbicides
- Fertilizers
- Paint
- Aircraft Fire Fighting
- Foam
- Metals
- Dumpster Wastes
- Sediment
- Landscape Waste
- Floatables
- Lavatory Chem. Wastes
- Potable Water System
- Chemicals
- Rubber Particles

**KEY APPROACHES**

- Perform inspections and enforcement
- Provide training for employees
- Promote education of vendors/public

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

| SC1 | ELIMINATION OF NON-STORM WATER DISCHARGES TO STORM DRAIN |
|---|---|

**APPROACH TO EXISTING FACILITY ACTIVITIES:**

***Operational Considerations***

- Use "dry" cleaning and surface preparation techniques where feasible.
- Limit the availability of outdoor water supplies (hose bibs).
- Post signs at outdoor water sources stating the appropriate uses and discouraging uses which would introduce pollutants to the storm drain system/receiving waters.

***Contingency Response***

- Develop and implement a Spill Prevention Control and Countermeasure (SPCC) Plan, if required under guidelines set forth in 40 CFR, Section 112.3(a), (b).
- Maintain adequate supplies of spill response equipment and materials in accessible locations near areas where spills may be likely to occur.

***Inspection and Training***

- Inspect waste containers frequently for leaks and proper closure seal.
- Develop employee training programs which emphasize the proper disposal procedures for operations-derived wastes.
- Provide the appropriate level of employee training in the following areas: spill response and prevention, storm water pollution prevention education (see SC-10 for storm water pollution education approaches), right-to-know awareness training, and hazardous materials management.

**REQUIREMENTS:**

- Capital and O&M costs associated with the elimination of non-storm water discharges can be high.

**LIMITATIONS:**

- Storm drain documentation for many facilities is not up-to-date.
- Activity-based (subtle) non-storm water discharges from a particular facility are typically sporadic, transient, and often require frequent inspections to detect.

**RELEVANT RULES AND REGULATIONS:**

.FR Vol. 60, No. 189, Sept. 25, 1995 Multi-Sector Storm Water General Permit
.40 CFR 110.3 Discharge of Oil
,40 CFR 112 Oil Pollution Prevention (SPCC/OPA Plans)
.40 CFR 117.3 Determination of Reportable Quantities for a Hazardous Substance
.40 CFR 122-124 NPDES Regulations for Storm water Discharges
.40 CFR 401 Effluent Limitation Guidelines

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

| SC2 | AIRCRAFT, GROUND VEHICLE AND EQUIPMENT MAINTENANCE |
|---|---|

**PURPOSE:**

Prevent or reduce the discharge of pollutants to stormwater from aircraft, vehicle, and equipment maintenance and repair, including ground vehicle and equipment painting/stripping and floor washdowns.

**APPROACH TO FUTURE FACILITIES AND UPGRADES:**

***Design of New Facilities and Existing Facility Upgrades***

- Provide covered maintenance areas when designing new facilities or upgrading existing facilities. Utilize indoor areas, lean-tos, or portable covers.
- Site outdoor maintenance areas so minimal quantities of runoff cross the site.
- Include appropriate storm water quality structures (oil/water separators, sumps, first flush diversion basins, etc. - see TC-1 for further information regarding treatment control BMPs) in the design of outdoor maintenance areas.

**APPROACH TO EXISTING FACILITY ACTIVITIES:**

***Operational Considerations***

Implement the following to the maximum extent practicable:

*Good Housekeeping*

- Use drip pans.
- Use absorbent materials at potential problem areas. Adequately collect/remove absorbent materials from area after use and dispose of them in an appropriate manner.
- Drain and crush oil filters (and oil containers) before recycling or disposal. Store crushed oil filters and empty lubricant containers in a leak-proof container - covered if outdoors.

**TARGETED ACTIVITIES**

- Aircraft Maintenance
- Ground Vehicle Maintenance
- Equipment Maintenance

| SC2 | AIRCRAFT, GROUND VEHICLE AND EQUIPMENT MAINTENANCE |
|---|---|

*Good Housekeeping, cont.*

- Label storm drain inlets to indicate they are to receive no wastes. Do not hose down work areas to the storm drainage system or use concrete cleaning products unless the storm drain inlet is blocked and wash water is collected and properly disposed of through a permitted sewer connection. As an alternative, use mops, dry sweeping compound, or contract professional cleaning services. Confirm the use of appropriate disposal practices by contract cleaning services.
- Drain and properly dispose of ail fluids and remove batteries from salvage aircraft, vehicles, and equipment.
- Recycle or properly dispose of the following: greases, oils, antifreeze, brake fluid, cleaning solutions, hydraulic fluid, batteries, transmission fluid, and filters.
- Use biodegradable products and substitute materials with less hazardous properties where feasible.

*Maintenance*

- Maintain clean equipment by eliminating excessive amounts of external oil and grease buildup. Use water-based cleaning agents or non-chlorinated solvents to clean equipment
- Clean any catch basins that receive runoff from a maintenance area regularly and especially after larger storms. Block storm drainage inlets (i.e., use pigs, but only during periods of no stormwater flow) and use a vacuum truck to collect wastes. Do not simply flush wastes into receiving waters.

*Physical Site Usage*

- Move maintenance activities indoors, provide cover over work area, or conduct off-airport.
- Use designated washing, steam cleaning, and degreasing areas to clean equipment.
- Store mechanical parts and equipment that may yield even small amounts of contaminants (i.e., oil or grease) under cover and away from drains.

*Structural Control*

- Maintenance and cleaning areas should be equipped with runoff controls that prevent discharge to storm sewers.
- Install and maintain catch basin filter inserts that assist in the removal of oil and grease, sediments and floatables.

*Contingency Response*

- Maintain adequate supplies of spill response equipment and materials in accessible locations near areas where spills may be likely to occur. Furnish all maintenance vehicles with adequate supplies of spill response materials and appropriate spill response procedures.

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

| SC2 | AIRCRAFT, GROUND VEHICLE AND EQUIPMENT MAINTENANCE |
|---|---|

***Inspection and Testing***

- Provide the appropriate level of employee training in the following areas: spill response and prevention, storm water pollution prevention education (see SC-10 for storm water pollution education approaches), right-to-know awareness training, and hazardous materials management.
- Provide employee storm water quality awareness training.
- Develop regular maintenance and inspection programs for oil/water separators.
- Characterize wastes collected form oil/water separators. Dispose of these wastes properly and provide appropriate employee training.

**LIMITATIONS:**

- Size, space and time limitations may preclude all work being performed indoors.
- Identification of engine and equipment leakage points may require the use of solvents or other cleaners to remove external accumulations of oily grime.

**RELEVANT RULES AND REGULATIONS:**

***Federal:***
FR Vol. 60, No. 189, Sept. 25, 1995 Multi-Sector Storm Water General Permit
40 CFR 110.3 Discharge of Oil
40 CFR 112 Oil Pollution Prevention (SPCC/OPA Plans)
40 CFR 117.3 Determination of Reportable Quantities for a Hazardous Substance
40 CFR 122-124, NPDES Regulations for Storm Water Discharges
40 CFR 401 Effluent Limitation Guidelines

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

# SC3 AIRCRAFT, GROUND VEHICLE, AND EQUIPMENT FUELING

**PURPOSE:**

Prevent fuel spills and leaks, and reduce their impacts to storm water.

**APPROACH TO FUTURE FACILITIES AND UPGRADES:**

***Design of New Facilities and Existing Facility Upgrades***

- Design fueling areas to prevent the run-on of storm water and the runoff of spills by employing the following approaches:
  - Cover the fueling area if possible.
  - Use a perimeter drain or slope the fueling area to a dead-end sump or oil/water separator.
  - Pave the fueling area with concrete rather than asphalt.
- If storm water runoff from fueling areas is not collected, install an appropriately-sized oil/water separator. Regulatory agency approvals are required.
- Install and maintain vapor recovery systems where required and/or appropriate.
- Existing underground fuel storage tanks should be upgraded with leak detection, spill containment, and overfill protection in advance of December 22,1998, the federal regulatory deadline. This is relevant to storm water regulations due to the potential for contamination of surface soils or waters that could be transported by storm water runoff.
- Design facilities to include secondary containment where required and/or appropriate.

**APPROACH TO EXISTING FACILITY ACTIVITIES:**

***Operational Considerations***

Implement the following to the maximum extent practicable.

*Good Housekeeping*

- Fuel pumps intended for vehicular use (not aircraft) should be posted with signs stating "No Topping Off" to prevent overflow.
- Use absorbent materials and spot cleaning for small spills; do not hose down the area unless the storm drain is blocked and drainage is collected by vacuum truck and disposed of through a permitted connection to the sanitary sewer.
- Properly dispose of any fuel spills and leaks. Vacuum equipment/trucks are recommended for collection. Always dispose of materials in an approved manner; use an approved treatment facility through a permitted connection. Never discharge materials to a catch basin or storm drain.

**TARGETED ACTIVITIES**

- Aircraft Fueling
- Vehicle Fueling
- Equipment Fueling

**TARGETED POLLUTANTS**

- Fuel

KEY APPROACHES

- Install berms or curbing around fueling areas
- Use absorbent materials and/or vacuum equipment for spills
- Install proper equipment for fuel dispensing and tank monitoring to prevent spills, leaks and overflows

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

| SC3 | AIRCRAFT, GROUND VEHICLE AND EQUIPMENT FUELING |
|---|---|

*Good Housekeeping (contd.)*

- Use pigs/mats over catch basins during fueling activity.
- Manage the disposal of water that collects in fuel tanks and fueling hydrant sumps according to state and federal regulations.

*Physical Site Usage*

- Avoid mobile fueling of equipment wherever feasible; fuel equipment at designated fueling areas.

*Structural Controls*

- Cover the fueling area if possible.
- Divert storm water runoff away from fueling area to avoid storm water contact with contaminated surfaces through the use of berms or curbing.
- Install gate valves at catch basins for use during fueling activity.
- Employ secondary containment or cover when transferring fuel from a tank truck to a fuel tank.

*Equipment*

- Provide appropriate monitoring for tanks containing fuel, such as:
  - Level indicators and gauges.
  - Overfill protection with alarms.
  - Interstitial leak detection for double-walled tanks.
  - Routine inspection/lockout for drainage valves for tank containment areas.
- Fuel dispensing equipment should be equipped with "breakaway" hose connections that will provide emergency shut-down of flow should the fueling connection be broken through movement.
- Automatic shut-off mechanisms should be in place on fuel tankers. These valves should remain in the closed position unless manually opened during fueling.

*Maintenance*

- Inspect, clean and maintain sumps and oil/water separators at appropriate intervals.

***Contingency Response***

- Develop and implement a Spill Prevention Control and Countermeasure (SPCC) Plan if required under guidelines set forth in 40 CFR, Sections 112.3(a), (b).
- Maintain adequate supplies of spill response equipment and materials in accessible locations near areas where spills may be likely to occur.
- Furnish adequate spill response information, equipment and materials on all fueling vehicles.

***Inspection and Training***

- Inspect fueling areas and storage tanks regularly. Record all maintenance activities and Inspections relating to fueling equipment and containers in a log book.
- Underground fuel storage tanks should be tested as required by federal and state laws.
- Provide the appropriate level of spill response training to personnel to address all types of potential spills.

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

| SC3 | AIRCRAFT, GROUND VEHICLE AND EQUIPMENT FUELING |
|---|---|

**REQUIREMENTS:**

- The cost of retrofitting existing fueling areas to minimize storm water contamination can be high. Practical design concepts such as incorporating extruded curb along the upstream side of facilities to prevent run-on of storm water can be of modest cost.

**LIMITATIONS:**

- Properly sized and installed oil/water separators must be regularly maintained to be effective (see TC-1 for a description of management practices relating to oil/water separator operations and maintenance).

**RELEVANT RULES AND REGULATIONS:**

.FR Vol. 60, No. 189, Sept. 25,1995 Multi-Sector Storm Water General Permit
.40 CFR 110.3 Discharge of Oil
.40 CFR 112 Oil Pollution Prevention.{SPCC OPA/Plans)
.40 CFR 117.3 Determination of Reportable Quantities for a Hazardous Substance
.40 CFR 122-124 NPDES Regulations for Storm Water Discharge
.40 CFR 401 Effluent Limitation Guidelines

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

# SC4 AIRCRAFT, GROUND VEHICLE AND EQUIPMENT WASHING

**PURPOSE:**
Prevent or reduce the discharge of pollutants to storm water drains from aircraft, vehicle, and equipment washing, and equipment degreasing.

**APPROACH TO FUTURE FACILITIES AND UPGRADES:**

***Design of New Facilities and Existing Facility Upgrades***

- Consider off-site commercial washing where feasible. Using appropriate offsite facilities will decrease the waste generated on-site.
- Consider incorporating a wash water recycling system into the project design.
- Outdoor washing operations should have the following design characteristics:
  - Paved with Portland cement concrete.
  - Bermed and/or covered (if feasible) to prevent contact with storm Water.
  - Sloped to facilitate wash water collection.
  - Wash water should be collected in a dead-end sump for removal or discharged to the sanitary sewer through a permitted connection.
  - Discharge piping serving uncovered wash areas should have a positive shut-off control valve that allows switching between the storm drain and the sanitary sewer.
  - Clearly designated.
  - Equipped with an oil/water separator designed to operate under storm water runoff conditions (treat storm water volumes and flow rates). Regulatory agency approvals are required.

**APPROACH TO EXISTING FACILITY ACTIVITIES:**

***Operational Considerations***

Implement the following to the maximum extent practicable.

*Good Housekeeping*

- Use "dry" washing and surface preparation techniques where feasible.
- Remove all materials (i.e., drippings and residue) using vacuum methods. Dispose of properly.
- Provide secondary containment for containers of washing and steam cleaning additives.
- Use pigs/mats to cover catch basins during wash activity.
- Use biodegradable phosphate-free detergents.
- Keep washing area clean and free of waste.
- Include proper signage to prohibit the discharge of waste oils into the drains.
- Collect and discharge wash water to an approved treatment facility (sanitary sewer system) through a permitted connection.

**TARGETED ACTIVITIES**

- Aircraft Washing
- Vehicle Wash
- Equipment Washing
- Equipment
- Degreasing

**TARGETED POLLUTANTS**

- Oil and Grease
- Solvents
- Vehicle Fluids
- Cleaning Solution

**KEY APPROACHES**

- Use designated are
- Use dry washing techniques
- Recycle wash water or discharge appropriately
- Cover catch basins
- Provide training

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

## SC4 AIRCRAFT, GROUND VEHICLE AND EQUIPMENT WASHING

*Physical Site Usage*

- Consider off-site commercial washing and steam cleaning where feasible.
- Using appropriate off-site facilities will decrease the waste generated on-site.
- Use designated wash areas indoors, or outdoors covered and bermed where feasible, to prevent contamination of storm water by contact with wastes.

*Structural Controls*

- Install gate valves at catch basins for use during washing activities to facilitate the collection of the wash water and prevent discharge to the storm drainage system.
- Filter and recycle wash water where practical.

*Maintenance*

- Conduct berm repair and patching.
- Inspect, clean, and maintain sumps, oil/water separators, and on-site treatment and recycling units.

***Contingency Response***

- Maintain adequate supplies of spill response equipment and materials in accessible locations near areas where spills may be likely to occur.

***Inspection and Training***

- Provide the appropriate level of employee training in the following areas: spill response and prevention, storm water pollution prevention education (see SC-10 for storm water pollution education approaches), right-to-know awareness training, and hazardous materials management.
- Develop regular maintenance and inspection programs for oil/water separators.
- Characterize wastes derived from oil/water separators. Provide appropriate employee training.

**REQUIREMENTS:**

- Capital costs vary depending on measures implemented.
  - Low cost: $500-1,000 for berm construction.
  - Medium cost: $5,000-20,000 for plumbing modifications (including re-routing discharge to the sanitary sewer and installing a simple sump).
  - High cost: $30,000-150,000 for on-site treatment and recycling.
- O&M costs increase with increasing capital investment.

**LIMITATIONS:**

- Some wastewater agencies may require pretreatment and monitoring of wash water discharges to the sanitary sewer.
- Steam cleaning and de-greasing operations can generate significant pollutant concentrations that may require permitting, monitoring, pretreatment, and inspections. These compliance issues will vary according to local agency jurisdiction.

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

| SC4 | AIRCRAFT, GROUND VEHICLE AND EQUIPMENT WASHING |
|---|---|

**RELEVANT RULES AND REGULATIONS:**

.FR Vol. 60, No. 189, Sept. 25,1995 Multi-Sector Storm Water General Permit
.40 CFR 110.3 Discharge of Oil
.40 CFR 117.3 Determination of Reportable Quantities for a Hazardous Substance
.40 CFR 122-124 NPDES Regulations for Storm water Discharges
.40 CFR 401 Effluent Limitation Guidelines

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

# SC5 AIRCRAFT DEICING/ANTI-ICING

**PURPOSE:**

Prevent or reduce the discharge of pollutants to storm water from aircraft deicing and anti-icing procedures.

**APPROACH TO FUTURE FACILITIES AND UPGRADES:**

***Design of New Facilities and Existing Facility Upgrades***

- When designing or modifying operating areas, consider the following
- characteristics:
  - Paved with Portland cement concrete.
  - Sloped to facilitate fluid collection.
  - Fluids could be collected in a dead-end sump for removal or discharged to the sanitary sewer through a permitted connection (check with local wastewater-agency).
  - Clearly designated.
  - Equipped with an oil/water separator.
- Consider incorporating a closed loop recycling system into the design of deicing/anti-icing stations.

**APPROACH TO EXISTING FACILITY ACTIVITIES:**

***Operational Considerations***

- Perform anti-icing and deicing operations only in areas designated by the COP Aviation Department as appropriate for such activities.
- Depending on conditions, apply only enough fluid to surfaces to ensure the safe operation of the aircraft. Excess fluid dripped to the ground contaminates soil and water if not properly contained.
- Clean ramp areas following deicing/anti-icing operations. Wet-type sweepers are effective in removing deicing fluids from paved areas.
- Dispose of or recycle the fluids in accordance with local, state, and federal regulations. Inspect, clean and maintain sumps and oil/water separators.

***Contingency Response***

- Maintain adequate supplies of spill response equipment and materials in accessible locations near areas where spills may be likely to occur.

***Inspection and Training***

- Monitor deicing and anti-icing operations regularly to ensure quantities of fluids used are at a minimum while not jeopardizing aircraft safety.
- Provide the appropriate level of employee training in the following areas: spill response and prevention, storm water pollution prevention education (see SC-10 for storm water pollution education approaches), right-to-know awareness training, and hazardous materials management.

**TARGETED ACTIVITIES**

- Aircraft Deicing
- Aircraft Anti-Icing

**TARGETED POLLUTANTS**

- Ethylene glycol
- Propylene glycol

**KEY APPROACHES**

- Perform in designated areas only
- Apply only required amounts of fluid
- Clean ramp area when done
- Cover catch basins
- Provide training
- Implement forthcoming recommendations of FAA

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

| SC5 | AIRCRAFT DEICING/ANTI-ICING |
|---|---|

**REQUIREMENTS:**

- Costs associated with the collection and proper disposal of anti-icing fluids can be high.

**LIMITATIONS:**

- Wastewater agencies may ban conventional anti-icing chemicals, such as ethylene glycol, from the sanitary sewer system or may require extensive pretreatment and monitoring of deicing and anti-icing fluid discharges to the sanitary sewer.

**RELEVANT REGULATIONS:**

.FR Vol. 60, No. 189, Sept. 25,1995 Multi-Sector Storm Water General Permit
.40 CFR 117.3 Determination of Reportable Quantities for a Hazardous Substance
.40 CFR 122-124 NPDES Regulations for Storm Water Discharges
.40 CFR 401 Effluent Limitation Guidelines

# DES MOINES INTERNATIONAL AIRPORT
# DES MOINES, IOWA

## SC6 — OUTDOOR MATERIAL HANDLING

**PURPOSE:**

Prevent or reduce the discharge of pollutants to storm water from loading and unloading of material and cargo.

**APPROACH TO FUTURE FACILITIES AND UPGRADES:**

***Design of New Facilities and Existing Facility Upgrades***

- Design loading/unloading areas to prevent storm water run-on through the use of the following practices:
  - Grading or berming.
  - Positioning roof downspout to direct storm water away from loading/unloading areas.
- Design facilities so that materials which may contribute pollutants to storm water may be stored indoors or under cover.
- Incorporate oil/water separators into exposed loading dock designs.

**APPROACH TO EXISTING FACILITY ACTIVITIES:**

***Operational Considerations***

*Good Housekeeping*

- Use seals or door skirts between vehicles and structures to prevent material exposure to rainfall.
- Contain and adsorb leaks during transfers and spillage from hose disconnections; dispose of residue properly.
- Avoid transferring materials in close proximity to storm drain inlets.
- Use drip pans under hoses.
- transfer liquids only in paved areas. Portland cement paving should be used if the liquid is asphalt reactive.
- Provide contractors and haulers with copies of pertinent BMPs. Require contractor/hauler adherence to BMP specifications.
- Consider contracting maintenance operations for material handling equipment.
- Designate an appropriate area for contractors to perform maintenance
- activities. Verify proper waste disposal practices of contractors.

*Physical Site Usage*

- Protect all loading/unloading activities from rainfall, run-on and wind dispersal to the maximum extent practicable. Viable options include conducting loading/unloading under existing cover, or moving indoors.
- Position tank trucks or delivery vehicles so that possible spills or leaks can be contained.

**TARGETED ACTIVITIES**

- Cargo Handling
- Fuel Storage
- Chemical Storage
- Equipment Storage

**TARGETED POLLUTANTS**

- Fuel
- Pesticides/Herbicides/
- Fertilizers
- Oil and Grease
- Solvents/Cleaning Solutions
- Battery Acid

**KEY APPROACHES**

- Conduct loading/unloading under cover
- Transfer materials in paved areas, away from storm drain inlets
- Contain and absorb leaks/spills that occur during material transfer

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

| SC6 | OUTDOOR MATERIAL HANDLING |
|---|---|

*Structural Controls*
- Cover loading/unloading areas/docks to reduce exposure of materials to rain. Construct roofing structure over material handling area, or move indoors.
- Consider relocating storm drain inlets in areas away from fuel hydrants.

*Maintenance*
- Conduct berm repair and patching.
- Inspect, clean and maintain oil/water separators.

*Contingency Response*
- Maintain adequate supplies of spill response equipment and materials in accessible locations near areas where spills may be likely to occur.
- Include spill kits on appropriate material handling vehicles and equipment.

*Inspection and Training*
- Conduct regular inspections and make repairs as necessary.
- Check loading/unloading equipment (valves, pumps, flanges, and connections) regularly for leaks.
- Develop and implement a written operations plan which describes loading/unloading procedures.
- Provide proper training for material handling equipment operators.
- Provide the appropriate level of employee training in the following areas: spill response and*prevention, storm water pollution prevention education (see SC-10 for storm water pollution education approaches), right-to-know awareness training, and hazardous materials management.

**REQUIREMENTS:**

- Capital and O&M costs should be low except when covering large loading/unloading areas.

**LIMITATIONS:**

- Space and time limitations may preclude the indoor or covered transfer of cargo and materials.

**RELEVANT RULES AND REGULATIONS:**

.FR Vol. 60, No. 189, Sept. 25,1995 Multi-Sector Storm Water General Permit
.40 CFR 110.3 Discharge of Oil
.40 CFR 112 Oil Pollution Prevention (SPCC/OPA Plans)
.40 CFR 117.3 Determination of Reportable Quantities for a Hazardous Substance
-.40 CFR 122-124 NPDES Regulations for Storm water Discharges

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

# SC7 OUTDOOR STORAGE OF SIGNIFICANT MATERIAL

**PURPOSE:**

Prevent or reduce the discharge of pollutants to storm water from outdoor storage areas for significant material (e.g., fuels, chemicals, bagged material on pallets, soils or asphalt material bulk storage, deicing compounds, etc.).

**APPROACH TO FUTURE FACILITIES AND UPGRADES:**

***Design of New Facilities and Existing Facility Upgrades***

- Require the use of appropriate water quality control structures for fuel and chemical storage areas such as detention/retention basins and sumps. Develop appropriate minimum performance standards for these water quality control structures and implement a reporting program to monitor the performance and maintenance of these structures.
- Chemical, fuel, and oil dispensing (non-aircraft) areas should be covered, if possible.
- Develop standard guidelines for the management of storm water which collects in secondary containment areas

**APPROACH TO EXISTING FACILITY ACTIVITIES:**

***Operational Considerations***

*Good Housekeeping*

- Avoid dispensing from drums positioned horizontally in cradles. Dispensing materials from upright drums equipped with hand pumps is preferred. Always use drip pans and self-closing spigots if dispensing from horizontally positioned drums.
- Store drums and containers on pallets or other structures to keep the container out of contact with storm water.
- Use drum lids to prevent rainfall from washing materials and drippage from the top of containers to the storm drain system.
- Discharge collected storm water from secondary containment areas according to guidelines developed by the federal government and applicable state and local regulations.
- Store all materials in their original containers or containers approved for that use. Ensure that all containers are appropriately sealed. Store empty containers indoors or under cover or move them off-site.

**TARGETED ACTIVITIES**

- Aircraft/Vehicle/
- Equipment
- Maintenance
- Aircraft/Vehicle
- Fueling
- Fuel/Chemical/Equipment Storage
- Cargo Handling

**TARGETED POLLUTANTS**

- Fuel
- Solvents/Cleaning
- Solutions
- Deicing/Anti-Icing
- Fluids

**KEY APPROACHES**

- Store materials indoors or under cover
- Store drums/containers on pallets
- Provide berming or secondary containment
- Develop/implement an SPCC, if required
- Perform and document periodic inspections

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

| SC7 | OUTDOOR STORAGE OF SIGNIFICANT MATERIAL |
|---|---|

*Good Housekeeping (contd)*

- Properly label all chemical containers with information, including their contents, hazards, spill response and first aid procedures, manufacturer's name and address, and storage requirements. Maintain copies of MSDS on file for any materials stored and/or handled by the applicator.

*Physical Site Usage*

- Protect all significant materials from rainfall, run-on, runoff and wind dispersal to the maximum extent practicable. Viable options are:
  - Store material indoors.
  - Cover the storage area with a roof.
  - Cover the material with a temporary covering made of polyethylene, polypropylene, or hypalon.
  - Minimize storm water run-on by enclosing the area, building a berm around the' area, store indoors, or completely cover.
- Reduce the quantities of significant materials stored outside {i.e., chemicals) to the minimum volume required based on variables such as release potential, usage, and shelf life.
- Make use of existing overhangs to the extent practicable.

*Structural Controls*

- Provide berming or secondarily contain storage tankers, ASTs, drums and containers.
- Install and maintain catch basin filter inserts.

*Maintenance*

- Inspect, clean and maintain sumps, if applicable.

*Contingency Response*

- Develop and implement a Spill Prevention Control and Countermeasure (SPCC) Plan, if required under guidelines set forth in 40 CFR, Section 112.3(a), (b).
- Maintain adequate supplies of spill response equipment and materials in accessible locations near areas where spills may be likely to occur.
- Post signs at all chemical storage locations in clearly visible locations noting the materials stored, emergency contacts, and spill cleanup procedures.

*Inspection and Training*

- Provide the appropriate level of employee training in the following areas: spill response and prevention, storm water pollution prevention education (see SC-10 for storm water pollution education approaches), right-to-know awareness training, and hazardous materials management.
- Perform and document periodic inspections in a log book. Inspection items should include the following:

- Check for external corrosion and structural failure.
- Check for spills and overfills due to operator failure.
- Check for failure of piping system (pipes, pumps, flanges, couplings, hoses, and valves).
- Check for leaks or spills during pumping of liquids or gases.
- Visually inspect new tanks or containers for loose fittings, poor welds, and improper or poorly fitted gaskets.
- Inspect tank foundations and storage area coatings.

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

| SC7 | OUTDOOR STORAGE OF SIGNIFICANT MATERIAL |
|---|---|

**REQUIREMENTS:**

- Capital and O&M costs will vary widely depending on the size of the facility and the necessary controls. Costs associated with on-site detention/retention facilities could be high.

**LIMITATIONS:**

- Storage structures must meet local building and applicable local Uniform Fire Code (UFC) requirements. However, spills and releases are frequently caused by improper handling rather than structural deficiencies.

**RELEVANT RULES AND REGULATIONS:**

,FR Vol. 60, No. 189, Sept. 25,1995-Multi-Sector Storm Water General Permit
.40 CFR 110.3 Discharge of Oil
.40 CFR 112 Oil Pollution Prevention {SPCC/OPA Plans)
.40 CFR 117.3 Determination of Reportable Quantities for a Hazardous Substance
.40 CFR 122-124 NPDES Regulations for Storm Water Discharges
.40 CFR 401 Effluent Limitation Guidelines

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

# SC8 WASTE/GARBAGE HANDLING AND DISPOSAL

**PURPOSE:**

Prevent or reduce the discharge of pollutants to storm water from waste handling and disposal by tracking waste generation, storage, and disposal; reducing waste generation and disposal through source reduction, re-use, and recycling; and preventing run-on and runoff from waste management areas, including garbage collection areas.

**APPROACH TO FUTURE FACILITIES AND UPGRADES:**

Design of New Facilities and Existing Facility Upgrades

- If possible, avoid the following characteristics when examining candidate sites for storing wastes:
  - Excessive slope.
  - High water table.
  - Locations near storm drain inlets.
  - Locations near public access areas.
- Waste handling and storage areas should be covered, if possible.
- Develop standard guidelines for the management of storm water which collects in secondary containment areas.
- Incorporate sanitary sewer drains into bermed, outdoor, non-hazardous waste storage areas, if approved by the local wastewater treatment agencies/regulations.

**APPROACH TO EXISTING FACILITY ACTIVITIES:**

***Operational Considerations***

*Good Housekeeping*

- Perform regular housekeeping activities in waste storage areas and surroundings.
- Recycle materials whenever possible.
- Inspect waste management areas for spills and waste management containers for leaks.
- Ensure that sediments and wastes are prevented from being washed, leached, or otherwise carried off-site.

**TARGETED ACTIVITIES**

- Fuel/Chemical Storage
- Painting/Stripping
- Garbage Collection

**TARGETED POLLUTANTS**

- Oil and Grease
- Vehicle Fluids
- Solvents/Cleaning Solutions
- Dumpster Wastes

**KEY APPROACHES**

- Cover waste storage Areas
- Recycle materials
- Regularly inspect and clean waste storage areas
- Berm waste storage areas to prevent contact with run-on or runoff
- Perform dumpster cleaning in designated areas
- Properly dispose of all fluids

| SC8 | WASTE/GARBAGE HANDLING AND DISPOSAL |
|---|---|

*Good Housekeeping (contd)*

- Schedule waste pickup as frequently as necessary to keep storage of waste to a minimum and to avoid overloaded/overfilled disposal containers.
- Minimize spills and fugitive losses such as dust or mist from loading areas.
- Maintain a minimal inventory of required chemicals to reduce the magnitude of potential spills and limit waste generation.
- Track waste generated:
  - Characterize waste streams.
  - Evaluate the process generating the waste.
  - Prioritize the waste streams using: manifests, bills of lading, biennial reports, permits, environmental audits, SARA Title III reports, emission reports, Material Safety Data Sheets (MSDS), NPDES discharge monitoring reports.
  - Inventory reports.
  - Data on chemical spills.
  - Emissions.
- Find substitutes for harmful chemicals; properly dispose of unusable chemical inventory.

*Physical Site Usage*

- Segregate and separate wastes.
- Avoid locating waste handling and storage in areas with storm drain inlets/catch basins.
- Locate waste storage areas beneath existing cover, if possible.

*Structural Controls*

- Enclose or berm waste storage areas, if possible, to prevent contact with run-on or runoff.

*Garbage Collection Areas*

- Design facilities to provide shelter and secondary containment for dumpsters.
- Use covered dumpsters and keep them closed and locked.
- Use only dumpsters with plugged drain holes to prevent leaks from waste materials.
- Do not dispose of liquid wastes such as oils or hazardous materials into dumpsters.
- Perform dumpster cleaning in designated areas that are bermed to contain wash water for a subsequent disposal or discharge to the sanitary sewer. Ramp scrubbers are effective in removing wash water from paved areas. Dispose of or recycle all fluids collected.

***Contingency Response***

- Maintain adequate supplies of spill response equipment and materials in accessible locations near areas where spills may be likely to occur.
- Equip waste transport vehicles with spill containment equipment.

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

| SC8 | WASTE/GARBAGE HANDLING AND DISPOSAL |
|---|---|

***Inspection and Training***

- Provide the appropriate level of employee training in the following areas: spill response and prevention, storm water pollution prevention education (see SC-10 for storm water pollution education approaches), right-to-know awareness training, and hazardous materials management.
- Perform and document in a log book periodic inspections of hazardous and non-hazardous waste storage areas. Inspection items should include the following:
  - Check for external corrosion and structural failure.
  - Check for spills and overfills due to operator failure.
  - Check for failure of piping system (pipes, pumps, flanges, couplings, hoses, and valves).
  - Check for leaks or spills during pumping of liquids or gases.
  - Visually inspect new tanks or containers for loose fittings, poor welds, and improper or poorly fitted gaskets.
  - Inspect tank foundations and storage area coatings.
  - Inspect dumpster areas for signs of leakage.

**REQUIREMENTS:**

- Capital and O&M costs for these programs will vary substantially depending on the size of the facility and the types of wastes handled.

**LIMITATIONS:**

- Hazardous waste that cannot be re-used or recycled must be disposed of by a licensed hazardous waste hauler.

**RELEVANT RULES AND REGULATIONS:**

.FR Vol. 60, No. 189, Sept. 25,1995-Muiti-Sector Storm Water General Permit
.40 CFR 110.3 Discharge of Oil
.40 CFR 112 Oil Pollution Prevention (SPCC/OPA Plans)
.40 CFR 117.3 Determination of Reportable Quantities for a Hazardous Substance
.40 CFR 122-124 NPDES Regulations for Storm water Discharges
.40 CFR 401 Effluent Limitation Guidelines

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

# SC9 BUILDING AND GROUNDS MAINTENANCE

**PURPOSE:**
Prevent or reduce the discharge of pollutants to storm water from building and grounds maintenance by washing and cleaning up with as little water as possible, preventing and cleaning up spills immediately, keeping debris from entering storm drains, and maintaining the storm water collection system.

**APPROACH TO FUTURE FACILITIES AND UPGRADES:**

***Design of New Facilities and Existing Facility Upgrades***

- Incorporate areas of landscape into project design. Landscaped areas are pervious and will result in less runoff discharge from a site.
- Incorporate design considerations such as leaving or planting native vegetation to reduce irrigation, fertilizer, and pesticide needs.
- Select landscaping plants which require little maintenance and/or pest control.
- Incorporate storm water detention/retention to reduce peak runoff flows and for water quality control.

**APPROACH TO EXISTING FACILITY ACTIVITIES:**

***Operational Considerations***

*Good Housekeeping*

- Collect outdoor washdown water and properly dispose of it through a permitted connection to the sanitary sewer. Approval from treatment facility required for discharge.
- Clean any catch basins that receive runoff from maintenance areas on a regular basis. Use a vacuum truck to remove accumulated materials. Do not simply flush wastes into the storm drain system.
- Minimize use of pesticides, herbicides, and fertilizers. Use according to directions. Seek less harmful/toxic products to replace ones currently used.
- Utilize integrated pest management where appropriate.
- Properly dispose of landscape waste, wash water, sweepings, and sediments.
- Regularly clean paved surfaces that are exposed to industrial activity. Use “dry” cleaning techniques, such as sweeping, whenever possible.

**TARGETED ACTIVITIES**

- Building Maintenance
- Grounds Maintenance

**TARGETED POLLUTANTS**

- Pesticides/Herbicides/Fertilizers
- Oil and Grease
- Sediment
- Landscape Waste

**KEY APPROACHES**

- Keep paved surfaces cleaned and swept
- Clean catch basins regularly using vacuum trucks
- Manage use of pesticides/herbicides/fertilizers

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

| SC9 | BUILDING AND GROUNDS MAINTENANCE |
|---|---|

*Structural Controls*

- Provide landscaped areas where erosion is becoming a problem.

***Contingency Response***

- Maintain adequate supplies of spill response equipment and materials in accessible locations near areas where spills may occur.

***Inspection and Training***

- Provide the appropriate level of employee training in the following areas: spill response and prevention, storm water pollution prevention education (see SC-10 for storm water pollution education approaches), right-to-know awareness training, and hazardous materials management.

**REQUIREMENTS:**

- Costs will vary depending on the type and size of the facility. Costs of on-site storm water detention/retention facility could be high.

**LIMITATIONS:**

- Alternative pest/weed controls may not be available, suitable, or effective in every case.

**RELEVANT RULES AND REGULATIONS:**

.FR Vol. 60, No. 189, Sept. 25,1995 Multi-Sector Storm Water General Permit
.40 CFR 117.3 Determination of Reportable Quantities for a Hazardous Substances
.40 CFR 122-124 NPDES Regulations for Storm Water Discharges
.40 CFR 401 Effluent Limitation Guidelines

# DES MOINES INTERNATIONAL AIRPORT
# DES MOINES, IOWA

## SC10 — STORM WATER POLLUTION PREVENTION EDUCATION

**PURPOSE:**

Prevent or reduce the discharge of pollutants to storm water from activities through implementing an education program targeting employees, vendors, and the public.

**APPROACH TO FUTURE FACILITIES AND UPGRADES:**

***Design of New Facilities and Existing Facility Upgrades***

- Work early on with design and construction engineers, and local storm water authorities to incorporate proactive storm water management features into projects such as decreased impervious areas, infiltration BMPs, biofilters, oil/water separators, etc.
- Inform all construction contractors of their responsibility to comply with adopted BMPs and with regulations prohibiting cross connections between sanitary sewers and storm drains. Provide contractors and subcontractors with copies of relevant BMPs during specification and bidding. phases.

**APPROACH TO EXISTING FACILITY ACTIVITIES:**

***Contingency Response***

- Provide adequate implementation training for facilities with a Spill Prevention Control and Countermeasure (SPCC) Plan, if required developed under guidelines set forth in 40 CFR, Section 112.3(a), (b).
- Adequately train employees in the use of spill response equipment and materials.

***Inspection and Training***

- Perform and document in a log book frequent inspections of work areas, waste storage facilities, maintenance areas, and contractor projects to examine compliance with BMPs. Follow up with additional training or enforcement as required. Incorporate inspection findings into subsequent training efforts.
- Design storm water pollution education programs to contain the following elements:
  - Promote the proper storage, use, and disposal of landscape maintenance chemicals and other potentially harmful chemicals.
  - Promote the use of safer alternative products such as: short-lived pesticides, non-chlorinated solvents, water-based paints, non-aerosol products.
  - Encourage the use of "dry" washing processes for aircraft, vehicles, and equipment.

**TARGETED ACTIVITIES**

- All Maintenance
- All Fueling
- All Washing
- Equipment Cleaning
- Cargo Handling
- All Storage
- Painting/Stripping
- Floor Washdowns
- Aircraft Deicing/Anti-Icing
- Garbage Collection
- Aircraft Lavatory Service
- Fire Fighting Equip.-Testing
- Potable Water System Flush.
- Runway Rubber Removal

**TARGETED POLLUTANTS**

- Oil and Grease
- Vehicle Fluids
- Fuel
- Solvents/Cleaning Sol.
- Deicing/Anti-Icing Fluid
- Battery Acid
- Pesticides/Herbicides/
- Fertilizers
- Paint
- Aircraft Fire Fighting Foam
- Metals
- Dumpster Wastes
- Sediment
- Landscape Waste
- Floatables
- Lavatory Chem. Wastes
- Potable Water System
- Chemicals
- Rubber Particles

**KEY APPROACHES**

- Perform inspections and enforcement
- Provide training for employees
- Promote education of vendors/public

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

| SC10 | STORM WATER POLLUTION PREVENTION EDUCATION |
|---|---|

***Inspection and Training (contd)***

- Design storm water pollution education programs to contain the following elements:
  - Encourage efficient and safe housekeeping practices in industrial activity areas.
  - Increase awareness of the detrimental environmental impacts that result when fuel, antifreeze, pesticides, lubricants, detergents, paints and other wastes are dumped onto the ground or into storm drains.
  - Promote source reduction and recycling of waste materials.
  - Increase awareness of possible penalties and fines associated with discharge of pollutants into storm drains.
  - Increase awareness of what is and what is not allowed to enter storm drains. Provide a mechanism for violations to be reported.

**REQUIREMENTS:**

- Capital and O&M costs are minimal for educational programs.
- Educational programs need to be ongoing. Information and training must be disseminated at regular intervals.

**LIMITATIONS:**

- The success of educational programs is difficult to measure. Acceptance and awareness are critical factors.

**RELEVANT RULES AND REGULATIONS:**

.FR Vol. 60, No. 189, Sept. 25, 1995-Multi-Sector Storm Water General Permit
.40 CFR 110.3 Discharge of Oil
.40 CFR 112 Oil Pollution Prevention (SPCC/OPA Plans)
.40 CFR 117.3 Determination of Reportable Quantities for a Hazardous Substance
.40 CFR 122-124 NPDES Regulations for Storm Water Discharges
.40 CFR 401 Effluent Limitation Guidelines

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

# SC11 LAVATORY SERVICE OPERATIONS

**PURPOSE:**

Eliminate discharges to the storm drain system associated with ground servicing of aircraft lavatory facilities. The sanitary sewage and associated rinse waters produced during the servicing of aircraft lavatory facilities must be discharged to a wastewater treatment facility under appropriate permitting. Trucks or trailers equipped with bulk storage tanks are typically used to service lavatory facilities. Non-storm water discharges and residuals associated with servicing these facilities can be classified as follows:

- Discharges and residuals associated with diluting and mixing the surfactants and disinfectants used for servicing lavatory facilities.
- Discharges and residuals associated with transferring materials from the aircraft.
- Discharges and residuals associated with transporting and disposing materials to the sanitary sewer system.

**TARGETED**

- Aircraft Lavatory Service
- Lavatory Truck Cleanout/Backflushing

**TARGETED POLLUTANTS**

- Lavatory Chemicals
- Lavatory Waste
- Lavatory Truck Wash Water

**APPROACH TO FUTURE FACILITIES AND UPGRADES:**

***Design of New Facilities and Existing Facility Upgrades***

- If possible, design triturator facilities to be covered, with low roll-over type berming.
- Include a source of water at the triturator for cleanup of lavatory service equipment.
- Coordinate permitting of the triturator sanitary sewer connection through the local storm water and sanitary sewering agencies.
- Triturator facilities should not be located near storm drains.

**APPROACH TO EXISTING FACILITY ACTIVITIES:**

***Operational Considerations***

- Do not discharge lavatory waste to sanitary sewer connections other than triturator facilities. Other industrial-type connections may be equipped with bypass gates which, if improperly maintained or defective, may discharge to the storm water collection system.
- Drain the aircraft connecting hose as completely as possible into the storage tank after servicing an aircraft. Properly secure all hoses, valves, and equipment when transporting waste to eliminate leakage and spills.
- Use only surfactants and disinfectants approved for discharge to the sanitary sewer system. Do not discharge or rinse other unapproved chemicals or materials into the triturator facility. Any change in the chemicals used in aircraft lavatory service operations must be approved by the COP Aviation Department.

KEY APPROACHES

- Do not discharge lavatory waste to sanitary sewer connections other than triturator facilities
- Utilize buckets or pans to capture drippage from aircraft lavatory access fittings
- Do not perform lavatory truck cleanout/backflushing at any location other than triturator facilities
- Carry absorbent and other containment equipment on the lavatory service equipment

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

| SC11 | LAVATORY SERVICE OPERATION |
|---|---|

***Operational Considerations (contd)***

- If possible, perform surfactant/disinfectant mixing and transfers in the triturator area or under cover. This will allow the rinsing of minor spills and splashes to enter the sanitary sewer system.
- Do not perform lavatory truck cleanout/backflushing at any location other than triturator facilities.
- Utilize buckets or pans to capture drippage from aircraft lavatory access fittings. Immediately dump the drippage into the bulk storage tank on the service cart or truck.
- Carefully handle chemicals and chemical concentrates. Immediately collect dry chemicals or absorb liquid chemicals for proper disposal. Do not hose down spills unless the discharge enters the sanitary sewer system through a permitted connection (triturator facility).
- Practice good housekeeping techniques at the triturator facility. Immediately clean spills of wastes and chemicals.

***Contingency Response***

- Carry absorbent and other containment equipment on the lavatory service equipment.
- Maintain adequate supplies of spill response equipment and materials in accessible locations near areas where spills may be likely to occur.

***Inspection and Training***

- Perform regular inspections of the hose and fittings used for transferring lavatory waste. Keep the equipment in good working order. Replace worn equipment before leaks develop. Notify appropriate ground service personnel if it is noticed that the aircraft lavatory fittings require maintenance.
- Provide the appropriate level of employee training in the following areas: spill response and prevention, storm water pollution prevention education (see SC-10 for storm water pollution education approaches), right-to-know awareness training, and hazardous materials management.

**REQUIREMENTS:**

- Costs associated with the elimination of discharges resulting from aircraft lavatory servicing are generally low. Most management practices are based on careful material handling, good housekeeping, and awareness of maintenance requirements.

**LIMITATIONS:**

- Facilities may have a limited number of permitted sanitary sewer access points (triturator facilities) for a large quantity of lavatory service equipment.

**RELEVANT RULES AND REGULATIONS:**

.FR Vol. 60, No. 189, Sept. 25,1995-Multi-Sector Storm Water General Permit
.40 CFR 117.3 Determination of Reportable Quantities for a Hazardous Substance
.40 CFR 122-124 NPDES Regulations for Storm Water Discharges
.40 CFR 401 Effluent Limitation Guidelines

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

# SC12 OUTDOOR WASHDOWN/SWEEPING

PURPOSE:
Prevent or reduce the discharge of pollutants to storm water from outdoor washdown and sweeping operations.

**TARGETED ACTIVITIES**

- Apron Washing
- Ramp Scrubbing
- Outdoor Washdown

**APPROACH TO FUTURE FACILITIES AND UPGRADES:**

***Design of New Facilities and Existing Facility Upgrades***

- Consider contracting apron washing/sweeping services. Using appropriate contractors will decrease waste handling responsibilities. Inform contractors of their responsibilities regarding proper disposal of sweeper and scrubber waste. Supply contractors with pertinent BMPs and operating specifications. Follow up with contractor inspections frequently.
- Incorporate appropriate waste receiving facilities for sweepers and washing equipment. Coordinate sanitary sewer connection permitting through the local sanitary sewering agency.
- Incorporate oil/water separators or other water quality devices into project designs.
- Consider incorporating gate valves in areas where apron washing will occur. The gate valves will direct wash water to the sanitary sewer in dry weather and will direct storm water to the storm drain system during wet weather. Mechanical devices should be incorporated to ensure that valves are not left open (to sanitary sewer) during wet weather.
- Coordinate permitting and connections through the local sanitary sewering agency.
- Employ berms to minimize run-on to other areas.

**APPROACH TO EXISTING FACILITY ACTIVITIES:**

***Operational Considerations***

- Collect and discharge wash water to the sanitary sewer system through a permitted connection.
- Use designated and approved discharge facilities to dispose of waste derived from apron/ramp cleaning.
- Use "dry" sweeping techniques where feasible.
- Dispose of sweepings in an appropriate manner.
- Conduct berm repair and patching.
- Inspect, clean and maintain sumps and oil/water separators.

**TARGETED POLLUTANTS**

- Oil and Grease
- Solvents/Cleaning
- Solutions
- Fuel
- Aircraft Fire Fighting
- Foam
- Deicing/Anti-Icing
- Sediment
- Floatables

**KEY APPROACHES**

- Collect and discharge wash water to the sewer
- Use "dry" sweeping techniques
- Dispose of sweepings

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

| SC12 | OUTDOOR WASHDOWN/SWEEPING |
|---|---|

### *Contingency Response*

- Maintain adequate supplies of spill response equipment and materials in accessible locations near areas where spills may be likely to occur.

### *Inspection and Training*

- Provide the appropriate level of employee training in the following areas: spill response and prevention, storm water pollution prevention education (see SC-10 for storm water pollution education approaches), right-to-know awareness training, and hazardous materials management.
- Develop regular maintenance and inspection programs for oil/water separators. Document inspections and maintenance in a log book.
- Characterize wastes derived from oil/water separators. Dispose of these wastes properly and provide appropriate employee training.

**REQUIREMENTS:**

- Capital costs vary depending on measures implemented.
  - Low cost: $500-1,000 for berm construction.
  - Medium cost: $5,000-20,000 for plumbing modification (including re-routing discharge to the sanitary sewer and installing a simple sump).
- O&M costs increase with increasing capital investment:

**LIMITATIONS:**

- Some wastewater agencies may require pretreatment and monitoring of wash water discharges derived from apron washing to the sanitary sewer.

**RELEVANT RULES AND REGULATIONS:**

.FR Vol. 60, No. 189, Sept. 25,1995 Multi-Sector Storm Water General Permit
.40 CFR 110.3 Discharge of Oil
.40 CFR 122-124 NPDES Regulations for Storm Water Discharges
.40 CFR 401 Effluent Limitation Guidelines

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

# SC13 FIRE FIGHTING FOAM DISCHARGE

**PURPOSE:**

Eliminate discharges to the storm drain system associated with flushing or testing of firefighting foam systems.

**TARGETED ACTIVITIES**

- Fire Fighting
- Equipment Testing
- Fire Fighting
- Equipment Flushing

APPROACH TO FUTURE FACILITIES AND UPGRADES:

***Design of New Facilities and Existing Facility Upgrades***

- Design testing facility with the following characteristics:
  - Located away from storm drain inlets, drainage facilities or water bodies.
  - Paved with concrete or asphalt, or stabilized with an aggregate base.
  - Bermed to contain foam and to prevent run-on.
  - Configure discharge area with a sump to allow collection and disposal of foam.
- Discharge foam waste to a sanitary sewer. Foam waste shall not be discharged to storm drains or water bodies.

**APPROACH TO EXISTING FACILITY ACTIVITIES:**

***Operational Considerations***

- Perform fire fighting foam testing operations only in areas designated by
- COP Aviation Department as appropriate for such activities.
- Properly dispose of, or recycle, foam discharge.
- Service sump regularly.
- Conduct berm repair and patching.
- Inspect, clean, and maintain sumps.

***Contingency Response***

- Maintain adequate supplies of spill response equipment and materials in accessible locations near area of activity.

***Inspection and Training***

- Inspect testing facility weekly or monthly, depending on frequency of use.
- Provide the appropriate level of employee training in the following areas: spill response and prevention, storm water pollution prevention education (see SC-10 for storm water pollution education approaches), right-to-know awareness training, and hazardous materials management.

**TARGETED POLLUTANTS**

- Aircraft Fire Fighting Foam

**KEY APPROACHES**

- Perform testing operations in designated areas
- Properly dispose of, or recycle, foam discharge
- Service sump regularly

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

| SC13 | FIRE FIGHTING FOAM DISCHARGE |
|---|---|

**REQUIREMENTS:**

- Capital costs vary depending on measures implemented.
  - Low cost: $500-1,000 for berm construction.
  - Medium cost: $5,000-20,000 for plumbing modifications (including re-routing discharge to the sanitary sewer and installing a simple sump.
- O&M costs increase with increasing capital investment.

**LIMITATIONS:**

- Some wastewater agencies may require pretreatment and monitoring of this type of discharge to the sanitary sewer.

**RELEVANT RULES AND REGULATIONS:**

.FR Vol. 60, No. 189, Sept. 25,1995 Multi-Sector Storm water General Permit
.40 CFR 122-124 NPDES Regulations for Storm water Discharges
.40 CFR 401 Effluent Limitation Guidelines

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

# SC15 RUNWAY RUBBER REMOVAL

**PURPOSE:**

Eliminate discharges to the storm drain of particulate rubber generated by runway rubber removal activities.

**TARGETED ACTIVITIES**

- Runway Rubber
- Removal

**APPROACH TO FUTURE FACILITIES AND UPGRADES:**

***Design of New Facilities and Existing Facility Upgrades***

- Design runway storm drain culverts to allow placement of particulate capture devices, such as hay bales or filter fabric, that will capture rubber and dirt particles generated during periodic runway rubber removal activities.

**APPROACH TO EXISTING FACILITY ACTIVITIES:**

***Operational Considerations***

- Place devices that will capture rubber particulates, such as filter fabric, over storm drain culverts or at other areas that will capture rubber particulates generated during periodic runway rubber removal activities.
- Use manual or mechanical cleaning methods (ordinary mechanical street sweepers) to remove rubber particulates from the runway and adjacent paved areas after periodic runway rubber removal activities.

***Inspection and Training***

- Provide the appropriate level of employee training in the following areas: spill response and prevention, storm water pollution prevention education (see SC-10 for storm water pollution education approaches), right-to-know awareness training, and hazardous materials management.
- Inspect storm drain culverts or runway drainage areas after runway rubber removal activities.

**TARGETED POLLUTANTS**

- Rubber particles
- Dirt particles

**KEY APPROACHES**

- Use hay bales or filter fabric over culverts
- Use manual or mechanical cleaning methods (e.g., street sweepers) to remove particulates following normal removal process

**REQUIREMENTS:**

- Capital and O&M costs should be low.
- Maintenance costs should be low.

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

| SC15 | RUNWAY RUBBER REMOVAL |
|---|---|

**LIMITATIONS:**

- Runway drainage patterns may not be suitable for the collection of rubber particulates in wash water run-off.

**RELEVANT RULES AND REGULATIONS:**

.FR Vol. 60, No. 189, Sept. 25,1995 Multi-Sector Storm Water General Permit
.40 CFR 122-124 NPDES Regulations for Storm Water Discharges

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

# TC1 — OIL/WATER SEPARATOR

**PURPOSE:**

Oil/water separators are baffled chambers designed to remove petroleum compounds and greases from storm water. Oil/water separators also remove floatable debris and settled solids (sediment).

**APPROACH TO FUTURE FACILITIES AND UPGRADES:**

***Design of New Facilities and Existing Facility Upgrades:***

Oil/water separators are typically used in areas where the concentrations of petroleum hydrocarbons, floatables, or sediment may be abnormally high and source control techniques are not very effective. There are two types of oil/water separators: the American Petroleum Institute (API) separator and the coalescing plate separator (CPS). Design, sizing, and placement of oil/water separators is dependent on several factors including: tributary area, type of activity, pollutant type and concentration, and water temperature.

- General sizing guidelines for API separators include the following:
- Horizontal velocity: 3 feet per minute.
- Depth of 3 to 8 feet.
- Depth-to-width ratio of 0.3 to 0.5.
- Width of 6 to 16 feet.
- Baffle height-to-depth ratios of 0.85 for top baffles and 0.15 for bottom
- baffles.

CPS separator sizing is more complex. Sizing calculations require the inclusion of information such as packing plate surface areas and plate angles. CPS separators can, due to their packed plate design, remove the same quantities of oils and greases while occupying less space than API separators.

**APPROACH TO EXISTING FACILITY ACTIVITIES:**

- Operational Considerations:
- Separators must be inspected and cleaned frequently of accumulated oil, grease, floating debris and sediments to be effective storm water quality controls.
- Oil absorbent pads are to be replaced as needed but will always be
- replaced prior to the wet season.

**TARGETED ACTIVITIES**

- Aircraft/Vehicle/Equipment Maintenance
- Aircraft/Vehicle/Equipment Fueling
- Aircraft/Vehicle/Equipment Washing
- Equipment Maintenance/ Degreasing
- Fuel/Chemical Storage
- Cargo Handling

**TARGETED POLLUTANTS**

- Oil and Grease
- Fuel
- Floatables
- Sediment

**KEY APPROACHES**

- Frequently inspect and clean separators
- Replace absorbent pads as needed

DES MOINES INTERNATIONAL AIRPORT
DES MOINES, IOWA

| TC1 | OIL/WATER SEPARATOR |
|---|---|

***Operational Considerations (continued):***

- The effluent shutoff valve will be closed during cleaning operations.
- Any standing water removed during the cleaning operation must be disposed of in accordance with Federal, state, and local requirements.
- Any standing water removed during the cleaning operation must be replaced with clean water to prevent oil carry-over through the outlet.

***Contingency Response***

- Maintain adequate supplies of spill response equipment and materials in accessible locations near areas where spills may be likely to occur.

***Inspection and Training***

- Provide the appropriate level of employee training in the following areas: spill response and prevention, storm water pollution prevention education (see SC-10 for storm water pollution education approaches), right-to-know awareness training, and hazardous materials management.
- Perform and document in a log book all inspections and maintenance operations.
- Develop a written operating, sampling, and reporting procedure under local storm water authority guidelines. Train appropriate employees to implement these procedures.

**REQUIREMENTS:**

- Capital and O&M Costs increase as the tributary area increases.

**LIMITATIONS:**

- Oil/water separator installations should be designed and installed by experienced individuals. Little data on the characteristics of petroleum hydrocarbons in storm water leads to considerable uncertainty about separator performance.

**RELEVANT RULES AND REGULATIONS:**

.FR Vol. 60, No. 189, Sept. 25,1995 Multi-Sector Storm Water General Permit
.40 CFR 110.3 Discharge of Oil
.40 CFR 112 Oil Pollution Prevention (SPCC/OPA Plans)
.40 CFR 117.3 Determination of Reportable Quantities for a Hazardous Substance
.40 CFR 122-124 NPDES Regulations for Storm Water Discharges