

## **GROUND WATER DISCHARGE PERMIT**

### **STATEMENT OF BASIS**

#### **PERMIT NO. UGW350005**

#### **Salt Lake City Department of Airports**

### **INTRODUCTION**

Ground Water Discharge Permit No. UGW350005, for the Salt Lake City Department of Airports' deicing operations storm water detention ponds and land application operations, is being renewed for another 5-year term. The detention pond is located one mile north of I-80 and east of the new runway, and the land application site is located at the northwest end of the airport property.

### **DESCRIPTION OF FACILITY**

Ground Water Discharge Permit No. UGW350005 was originally issued in 1993. The original permit covered evaporation ponds, 1.4 acres in size, that were discontinued and closed in 1998. Since 1998, the permit has covered the recycling facility and current land application. The detention pond facility is located at 2175 North 4325 West, Salt Lake City, Utah. The facility is comprised of three cells with a holding capacity of 10 million gallons. It is part of the glycol recycling plant. The ponds have a composite bottom liner consisting of a clay sub-liner overlain by a 30 mm geomembrane liner. Each cell is also covered by a 36 mm flexible membrane liner.

The runoff from the airplane deicing areas is captured and diverted into the detention ponds, where it is contained and recycled. The runoff may contain high concentrations of the deicing chemical propylene glycol. Propylene glycol is rapidly degraded in all environmental media, and biodegradation is the most important transformation process in water and soil. The half-life of propylene glycol in water is expected to be one to four days under aerobic conditions, and three to five days under anaerobic conditions. The half-life in soil is expected to be equal to or less than that for water (ATSDR, 2008). This was confirmed by a land application pilot project conducted during the 2001-2002 season, in which glycol was degraded to non-detectable concentrations in soil at a depth of 3 feet after one week.

In 2016, the Salt Lake Department of Airports completed construction on the fourth end-of-runway deicing pad, increasing the amount of stormwater collected. The land application site is 46 acres and is located to the northwest of the detention ponds. The site consists of four 400-foot radius pivots. Applications are conveyed through piping emanating from one of three ponds used for recycling glycol for spray irrigation. The application concentration will remain below 1% glycol and will be applied at a rate no greater than 1.6 inches as measured by a rainfall gauge. Surface runoff from the application area is not permitted. The land application program will cease if it is determined to produce an unacceptable nuisance condition. The source pond will contain early stream flows, which consist primarily of stormwater runoff. If the monitored stormwater concentration approaches 1% glycol, the flow will be diverted to the other two ponds. Fluids with

a concentration greater than 1% will be recycled through the plant. The seasonal discharge is 7-9 million gallons.

## **GROUND WATER CLASSIFICATION AND PROTECTION LEVELS**

Ground water at the site is classified as Class IV Saline Ground Water based on total dissolved solids concentrations in excess of 10,000 mg/l. Due to its naturally high concentration of total dissolved solids, the shallow water-table aquifer is not generally suited for domestic or industrial use without extensive treatment.

Depth to ground water varies seasonally from 4 to 10 feet below ground surface. No degradation of ground water is likely to occur, as confirmed by ground water and soil sample analytical results collected during and after each application season.

## **GROUND WATER MONITORING**

Ground water quality at the detention pond site is monitored semi-annually using four ground water monitoring wells (MW-1 through MW-4), and ground water quality at the land application site is monitored after each season using three ground water monitoring wells (PZ-1 through PZ-3). In addition, soil samples are collected at the three land application areas to monitor the impact of land application on subsurface soils. Ground water samples are analyzed for pH, temperature, conductivity, total dissolved solids, propylene glycol, and total petroleum hydrocarbons. Soil samples are analyzed for propylene glycol.

## **References**

Agency for Toxic Substances and Disease Registry (ATSDR), Division of Toxicology and Environmental Medicine, 2008. Addendum to the Toxicological Profile for Propylene Glycol, December 18, 2008, Atlanta, GA.

U.S. Department of Health and Human Services, 1997. Toxicological Profile for Propylene Glycol, prepared in accordance with guidelines developed by the Agency for Toxic Substances and Disease Registry and the Environmental Protection Agency, September 1997, Atlanta, GA.