

2007 August 22 NCES Brief Summary of DES Surface Water Split Sampling

New Hampshire Department of Environmental Services (NHDES) and Sanborn, Head & Associates (SHA) personnel collected water samples from the eight surface water sampling sites on July 25, 2007. All of these sites are associated with the Groundwater Management Zone (GMZ), a designated, surveyed area where groundwater was impacted by the former (now removed) unlined landfill. Split samples were collected for all laboratory analyses required for July 2007 by the Groundwater Management and Release Detection Permit. These parameters included NHDES Petroleum and Hazardous Waste Remediation Full List of Analytes for Volatile Organics (VOCs), chemical oxygen demand (COD), chloride, nitrate, total Kjeldahl nitrogen (TKN), total iron and total manganese. SHA made field measurements of specific conductance and pH. DES also collected samples for an additional 12 metals not required by the permit this July. These metals included antimony, arsenic, barium, beryllium, cadmium, chromium, lead, mercury, nickel, selenium, silver and thallium. DES has not yet received the analytical results from North Country Environmental Services. The State Lab analytical results are complete.

With reference to parameters measured, the quality of Ammonoosuc River basically is not different at the downstream boundary from the upstream boundary of the GMZ and only slightly impacted where the Main Seep flowage enters the river. No water quality violations were detected. Seventy VOCs, COD, TKN and 11 of the 12 additional metals were not detected at any of the sites. The twelfth metal, common metal barium (quality standard 2.0 mg/L), was measured at 0.0073, 0.0077 and 0.0074 mg/L in downstream order. Chloride was measured at 7.0 at the three sites. Nitrate was measured at 0.13, 0.13 and 0.11 mg/L in downstream order. Iron was detected at 0.158, 0.394 and 0.194 mg/L in downstream order. Manganese was detected at 0.016, 0.035 and 0.020 mg/L in downstream order.

No primary water quality violations were detected at the Main Seep or down slope flowage from the Main Seep. Seventy VOCs, COD, TKN, and 10 of the 12 additional metals were not detected. Seep water had concentrations in mg/L of iron (2.62), manganese (0.536), arsenic (0.0015) and barium (0.0114). Flowage from the Seep had concentrations from duplicate samples of iron (14.1 and 12.9), manganese (0.710 and 0.675), arsenic (0.0047 and 0.0043) and barium (0.0126 and 0.0121). Chloride was detected at 4.0 mg/L at both sites. Nitrate was detected at 0.50 and 0.44 mg/L.

Testing methods and quality standards for water analyses used are based on accepted health risk assessments for characterization and monitoring of hazardous waste sites. All analyses except COD were performed by the certified NHDES lab. COD analyses were subcontracted to the certified Katahdin Laboratory.

Background Notes

(cont.)

The Groundwater Management and Release Detection Permit for this facility is a dual permit. The management part of the permit addresses the former unlined landfill that was totally removed and placed in the double-lined Stage I landfill between December 1991 and October 1993. The release detection part of the permit addresses the double-lined landfill stages.

The designated Groundwater Management Zone (GMZ) includes the area where groundwater was impacted by waste from the former unlined landfill. Eight surface water sites are monitored under terms of the permit. The four springs sites (Main Seep S-1, S-101, S-108 and S-109) and surface flowage site SF-1 are within the GMZ along the steep terrace slope to the Ammonoosuc River. The three "edge of river" sample sites are at the surveyed bound where the upstream (easterly) edge of the GMZ intersects the river (AR-1), identified site about 25 feet downstream from where SF-1 flow enters the river (AR-2), and at the bound where the downstream (westerly) edge of the GMZ intersects the river.