

**FACT SHEET FOR
PROPOSED REMEDIAL ACTION DECISION
NORFOLK CLOSED LANDFILL**

The Nebraska Department of Environmental Quality (NDEQ) is providing public notice of its intent to propose final cleanup levels and remedial action at the Norfolk Closed Landfill. This fact sheet provides background information on the site, a summary of the groundwater contamination, a description of the proposed remedial action, a description of the public participation procedures, and the NDEQ contact person.

Site Location: The Norfolk Closed Landfill is located six miles south of Norfolk, Nebraska. The site is bordered by 837th Road on the south, 838th Road on the north, 560th Road on the east, and located six miles southeast of the town of Norfolk, NE. Highway 81 is 3 miles west of the landfill. The site occupies the east half of Section 13, Township 23 North, Range 1 West, Madison County. The landfill is owned by Republic Services, Inc.

Groundwater Contamination: The groundwater at this site has been contaminated as a result of previous operations. The primary contaminants of concern detected in the groundwater are volatile organic compounds (VOCs) and metals. The NDEQ compared contaminant concentrations detected in the groundwater to the maximum contaminant levels (MCLs), the NDEQ's Voluntary Cleanup Program (VCP) Remediation Goals (RGs), or EPA Regional Screening Levels for tap water to determine the significance of the contamination. MCLs are established by Title 118 – Groundwater Quality Standards and Use Classification.

The Norfolk Landfill overlies two hydrologic units, divided into three groundwater monitoring zones. The shallow zone (4-16 feet below ground surface [bgs]) and the medial zone (17-35 ft bgs) are located in a fine sand unit, interbedded with a clay layer near the creek north of the landfill, and resting on another clay layer in the central and southern portion of the property. The deep zone (35-70 ft bgs) is located in a sand and gravel unit, which rests on weathered shale bedrock of the Niobrara Formation. The contamination is present in the medial and deep zones in the very northern portion of the property, extending offsite, and in the medial zone in the central and southern portion of the property, where a clay layer is present separating the medial and deep zones.

There are currently no exposure pathways, though groundwater contamination extends offsite, to the north east approximately ¼ of a mile, and is located within 500 feet of a domestic drinking water well.

Groundwater Remedial Action Classification: The NDEQ assigns a Remedial Action Class (RAC) to groundwater contamination to determine the importance of remedial action based, in part, on the use of the groundwater in the area (Nebraska Title 118, Appendix A, Step 8). The NDEQ typically requires extensive cleanup of groundwater that is classified as RAC-1.

The pollution event for this site has been classified as a RAC-1 due to the fact there is a domestic drinking water well within 500 feet of the impacted aquifer. The NDEQ is proposing the final cleanup levels, shown in Table 1. These cleanup levels are based on potential adverse impact to domestic drinking sources.

| Table 1. Proposed Final Cleanup Levels for McCook Landfill | |
|---|----------------------|
| Contaminant | Concentration |
| Chlorinated VOCs | |
| 1,4-Dichlorobenzene | 75 µg/L |
| 1,1,2-Trichloroethane | 5 µg/L |
| <i>1,1-Dichloroethane</i> | <i>2.4 µg/L</i> |
| 1,1-Dichloroethylene | 7 µg/L |
| 1,2-Dichloroethane | 5 µg/L |
| Cis-1,2-Dichloroethylene | 70 µg/L |
| 1,2-Dichloropropane | 5 µg/L |
| Methylene Chloride | 5 µg/L |
| Tetrachloroethylene | 5 µg/L |
| Trichloroethylene | 5 µg/L |
| Vinyl Chloride | 2 µg/L |
| Non-Chlorinated VOCs | |
| <i>1,4-Dioxane</i> | <i>6.1 µg/L</i> |
| 2-Hexanone* | ----- |
| <i>Acetone</i> | <i>8,200 µg/L</i> |
| Benzene | 5 µg/L |
| Ethylbenzene | 700 µg/L |
| Toluene | 1,000 µg/L |
| Xylene | 10,000 µg/L |
| Metals | |
| Arsenic | 10 µg/L |
| Barium | 2,000 µg/L |
| <i>Cobalt</i> | <i>1,800 µg/L</i> |
| Other Chemicals of Potential Concern | |
| Nitrate | 10,000 µg/L |
| Based on Nebraska Title 118 MCLs (bold), EPA Regional Screening Levels-RSL's (<i>italics</i>), or NDEQ VCP Remediation Goals | |
| *No MCL, RSL, or RG established | |

Proposed Remedial Actions: The NDEQ is proposing the following remedial actions: enhanced bioremediation, in-situ chemical oxidation, groundwater recovery, monitored natural attenuation, long-term groundwater monitoring, landfill cap maintenance, landfill gas monitoring, institutional controls, periodic private well sampling, and contingency measures to supply alternate water to impacted well users.

Enhanced bioremediation, in the MW 6M/7M area (just northeast of the filled area) and the field west of the filled area, and in-situ chemical oxidation, in the downgradient area (north of the filled area) and in the field west of the filled area, will eliminate ongoing sources of groundwater impact and restore groundwater quality to pre-landfill conditions. Landfill gas monitoring, around the perimeter of the filled area, will assure early detection of any significant changes in landfill conditions. Groundwater recovery, in the field west of the filled area, will eliminate ongoing sources of groundwater impact and prevent off-site migration of groundwater impact. Monitored natural attenuation, in the field west of the filled area, will restore groundwater quality to pre-landfill condition. Long term groundwater monitoring, on and off-site, and continued monitoring of downgradient domestic wells will assure early detection of any significant changes in groundwater conditions, prevent human contact with groundwater not in compliance with quality standards, and demonstrate achievement of final cleanup levels within a reasonable period of time. Landfill cap maintenance is a presumptive remedy that prevents human exposure of landfill materials and prevention of leachate formation. Institutional controls, on site, prevent, or adequately respond to, the installation of drinking water wells in the contaminated portion of the aquifer and insure protection of human health and the environment, preventing human contact with groundwater not in compliance with quality standards. Possible contingencies include additional investigations and provisions to supply alternate water to impacted well users.

Public Participation Procedures: You may receive additional information, submit written comments regarding the proposed actions, and request a hearing, in writing, on or before **May 11, 2012**. If you request a hearing, you must state the nature of the issues to be raised, present your arguments, and facts to support your position in writing to NDEQ. If the Director grants a public hearing, the hearing will be advertised by public notice at least 30 days prior to its occurrence. Comments and requests should be mailed to David Haldeman, Waste Management Division, Nebraska Department of Environmental Quality, PO Box 98922, Lincoln, NE 68509-8922, phone (402) 471-2186.

Contact: The fact sheet and public notice pertaining to the Norfolk Closed Landfill are available for inspection at the Norfolk City Library, 308 Prospect Street, Norfolk, Nebraska. These materials are also located at the office of the Nebraska Department of Environmental Quality, 1200 N Street, The Atrium, Suite 400, Lincoln, Nebraska. Please notify the Department of Environmental Quality if alternate formats of materials are needed by **April 25, 2012**. Contact phone

number is (402) 471-2186. TDD users please call 711 and ask the relay operator to call us at (402) 471-2186. Further information may be obtained from Mike Felix, Remediation Section, (402) 471-4210.