BUREAU OF ENVIRONMENTAL REMEDIATION/REMEDIAL SECTION GUIDANCE

SCOPE OF WORK (SOW) FOR A NITRATE PRESUMPTIVE REMEDY

BER POLICY # BER-RS-047
DATE: 2003

PAGES: 5

Section Chief: _____ **Date:** 7-17-6

Bureau Manager: _____ **Date:** 7-20-6

REVISIONS

Reviser: **Date of Revision:**

ORIGINATOR

Originator: Tom Peterson **Date:** 8/7/2003

Kansas Department of Health and Environment/Bureau of Environmental Remediation
General Guidelines for Remediation of Nitrate-Contaminated Sites

The Kansas Department of Health and Environment/Bureau of Environmental Remediation (KDHE/BER) has developed an approach tailored to address contaminated sites where nitrate/ammonia have impacted soil and/or ground water. KDHE's approach constitutes a nitrate/ammonia *Scope of Work for a Nitrate Presumptive Remedy*. Because conditions at many nitrate/ammonia-contaminated sites are similar and cleanup options are limited, this Scope of Work is intended to streamline the cleanup process for nitrate sites by eliminating many of the procedural steps leading up to remedial action. KDHE/BER's Presumptive Remedy strategy assumes that, at minimum, an investigation has been conducted under KHDE's oversight to identify and delineate the source areas and extent of the nitrate/ammonia contamination. Due to the expense, difficulty, and time-consuming nature of in-situ nitrate/ammonia remedial alternatives, KDHE's approach emphasizes the beneficial use of nitrate/ammonia-contaminated media, including excavation and land application of impacted soil and use of impacted ground or surface water for irrigation, chemical make-up water, or other beneficial use. In order for a nitrate/ammonia-contaminated site to be eligible for a beneficial re-use remedial alternative there must be analytical documentation ensuring that no additional contaminants are present in the media at levels exceeding the Tier 2 levels documented in the Risk-based Standards of Kansas Manual, or other specified agronomic application rates approved by KDHE.

While KDHE/BER's approach emphasizes the beneficial re-use of nitrate/ammonia-contaminated media, KDHE/BER recognizes that other remedial alternatives exist. Therefore, KDHE/BER does not wish to discourage the consideration of treatment alternatives other than excavation and land application of nitrate/ammonia-contaminated soil and beneficial use of contaminated water. KDHE/BER's emphasis on beneficial use recognizes that this alternative is often the most expedient and least expensive remedial option currently available for the remediation of nitrate/ammonia contamination. KDHE/BER's general expectations for remediation of nitrate/ammonia-contaminated sites include the following:

I. Identification and reduction of source soil contamination to the extent practicable;
II. Identification of any threatened or affected drinking water sources and provision of treatment or alternate water supplies, as appropriate;
III. Identification of the extent of ground water contamination on and off site, and monitoring and reporting of the occurrence of the contamination over time;
IV. Reduction of ground water contamination hot spots through pumping for beneficial use, discharge, or treatment, whichever presents the most potential for timely reduction of ground water concentrations; KDHE/BER will also consider other innovative proposals for nitrate reduction.

When KDHE/BER receives a proposal for beneficial re-use of contaminated media the proposal must identify and address any permit requirements. KDHE/BER requires that a KDHE/BER *Land Application Work Plan* and *Agreement Form* be completed prior to the land application of contaminated soil and/or water. The *Work Plan* is intended to ensure that contaminated soil and/or water is applied at rates that do not exceed normal and acceptable application rates for healthy fertilization of crops, and protection of surface water and ground water from runoff and infiltration of excessive amounts of dissolved nitrate/ammonia beyond root zone depths. The *Agreement Form* ensures that the owner of the land receiving the contaminated media is in agreement with the application and also agrees to ensure that the application is made in accordance with reasonable and prudent crop nutrient application practices. The *Land Application Work Plan* and *Agreement Form* are available from the KDHE/BER project manager, and will be found on the web in the near future. Beneficial re-use of contaminated surface water or ground water for irrigation may require approval from the KDHE/Bureau of Water (telephone 785-296-5547). If the installation of a water well is necessary an application must be made to the KS Dept. of Agriculture/Division of Water Resources (telephone 785-296-3717).

Scope of Work
for a
Nitrate Presumptive Remedy Plan

The primary objectives of the Nitrate Presumptive Remedy Plan are described as follows:

1) To provide alternate water supplies as necessary to impacted or threatened drinking water wells;
2) To establish cleanup goals and strategies consistent with KDHE policy and evaluate the time that will be required to reach the cleanup goals;
3) To describe the tasks necessary to implement the selected Nitrate Presumptive Remedy;
4) To provide detailed design plans and specifications for the full implementation of the Nitrate Presumptive Remedy;
5) To identify and obtain necessary easements and permits required for the implementation of the Nitrate Presumptive Remedy;
6) To complete a plan to monitor the effectiveness of the Nitrate Presumptive Remedy during and subsequent to implementation.

This Scope of Work outlines the required elements of the Nitrate Presumptive Remedy Plan which is to be prepared as a deliverable document. The Nitrate Presumptive Remedy Plan will at a minimum include the following components:

1.0 Summary of Previous Contamination Investigation Results and Current Site Conditions

Summarize previous investigation results identifying areas and media contaminated with nitrate/ammonia. Identify current or historical practices or fertilizer handling areas that may contribute to ground water contamination. The summary is to include maps indicating the site location, and areas and levels of contamination to be addressed by the Nitrate Presumptive Remedy.

2.0 Tasks Required to Complete the Nitrate Presumptive Remedy

Describe in detail the tasks required to complete the Nitrate Presumptive Remedy. The tasks will be listed so that they clearly state the manner in which the Nitrate Presumptive Remedy is to be implemented. The tasks will include those necessary to complete the site monitoring system and those necessary for obtaining necessary easements and permits. Necessary tasks may include additional source characterization.

3.0 Design Specifications for the Nitrate Presumptive Remedy

The complete design specifications, including any relevant figures or site/system engineering layouts will be provided. These specifications will be presented in sufficient detail so that contractors could bid on the completion of the Nitrate Presumptive Remedy. Specifications may include volumes of soil to be excavated and land-applied or otherwise treated, cleanup verification testing protocols, design specifications for beneficial use of nitrate-contaminated water including pump testing if deemed necessary, ground water modeling, pumping well controls, operating volumes, etc.

4.0 Monitoring Program Design

The monitoring program design will include plans for the completion and operation of a monitoring program including monitor well installation locations and construction design, frequency of site monitoring, a description of quality assurance/quality control considerations for the laboratory and field, and a description of reporting methods and frequency. At a minimum, the monitoring reports will include: tabulated current and historical analytical results, static water elevation measurements and top-of-casing elevations, analytical data sheets, a map which shows the site and monitoring wells or other sample point locations, description of any deviations from the approved sampling procedures/equipment, quality assurance/quality control data, a contour map of the water level elevation, an iso-concentration map, an evaluation of the effectiveness of the corrective action during the reporting period, logs of any newly constructed site monitor wells, and all other relevant site data collected during the reporting period. The monitoring report must be submitted to KDHE no later than 45 days following the collection of monitoring samples.

5.0 Schedule

A schedule for completing all activities necessary to construct and implement the Nitrate Presumptive Remedy as described in the paragraphs above will be submitted to KDHE for approval. The schedule will summarize the Nitrate Presumptive Remedy tasks and provide a date for the completion of the Nitrate Presumptive Remedy and submission of the Nitrate Presumptive Remedy report.

Scope of Work
for a
Nitrate Presumptive Remedy

The primary objectives of the Nitrate Presumptive Remedy are described as follows:

1) To remove current, and prevent future exposure to nitrate contaminated ground water and document compliance with that goal throughout the duration of the project;
2) To implement the Nitrate Presumptive Remedy Plan approved by KDHE;
3) To monitor the progress/success of the Nitrate Presumptive Remedy;
4) To maintain communication with KDHE through reporting and by other methods during Nitrate Presumptive Remedy implementation;
5) To submit a Nitrate Presumptive Remedy Report for KDHE approval which includes and describes operation and maintenance of the Nitrate Presumptive Remedy system and emergency contingency plans, as appropriate, in the case of any failure of the Nitrate Presumptive Remedy system.

1.0 Implementation of Selected Nitrate Presumptive Remedy

Implement the selected Nitrate Presumptive Remedy as approved according to the Nitrate Presumptive Remedy Plan. Follow the schedule of implementation as presented in the approved Nitrate Presumptive Remedy Plan.

2.0 Monitoring Program

Implement the monitoring program as approved in the Nitrate Presumptive Remedy Plan. Follow the schedule of implementation and monitoring frequency as approved in the Nitrate Presumptive Remedy Plan. Evaluate and document any exposure by receptors or new targets. Document treatment system effectiveness.

3.0 Reporting/Communication System

3.1 Monitoring Reports

Submit monitoring reports as described in the Nitrate Presumptive Remedy Plan. Monitoring reports are to include a description of the progress and effectiveness of the site Nitrate Presumptive Remedy following implementation of the corrective action. Report any site monitoring results within 45 days of sampling. Notify KDHE in the event of any significant changes which may impact the effectiveness of the site Nitrate Presumptive Remedy in its ability to protect human health and the environment.

3.2 Nitrate Presumptive Remedy Report

Submit a Nitrate Presumptive Remedy Report for KDHE approval which (1) describes the final design, tasks, and day-to-day operation and maintenance of the Nitrate Presumptive Remedy system, and (2) if applicable, describes in detail the emergency contingency plan(s) which will go into effect in the case of any failure in the Nitrate Presumptive Remedy operations. The Nitrate Presumptive Remedy Report is to include a captioned, color photographic record of the Nitrate Presumptive Remedy.