VCPRP SCOPES OF WORK FOR CLEANUP

The Voluntary Cleanup Decision

KDHE will use the information contained in the approved Voluntary Cleanup Investigation Report to support a No Further Action determination or to determine whether a voluntary cleanup of the property will be necessary. A voluntary cleanup will be required when the analytical data contained in the investigation report indicates whether contamination at a property exceeds chemical- and media-specific risk-based cleanup levels as established by KDHE (reference the Risk-based Standards for Kansas Manual), or whether conditions at the property are in violation of other applicable federal, state, and local laws and/or regulations. Voluntary cleanup will be required by KDHE to protect human health or the environment if the established cleanup standards are exceeded. A No Further Action determination may be issued by KDHE if analytical data indicates that the established cleanup standards have been met.

Voluntary cleanups may be as simple as monitoring or establishing institutional controls (Environmental Use Controls) or they may involve actual cleanup such as soil removal, ground water treatment systems, in situ treatment, etc. The scopes of work for a voluntary cleanup presented in this section provide general guidance to voluntary parties and their consultants in preparing necessary documentation. Additionally, documentation of QA/QC and health and safety planning will be required for the Voluntary Cleanup Plan. The voluntary party may elect to conduct a property-specific risk analysis concurrent with preparing a Voluntary Cleanup Plan to support the selected cleanup alternative and/or to justify the property-specific cleanup levels proposed in the cleanup plan. The voluntary party must obtain KDHE's approval before initiating a property-specific risk analysis.

The Voluntary Cleanup Proposal

Following KDHE's determination that a voluntary cleanup will be required at a property, KDHE will notify the voluntary party of this decision. The voluntary party is then to submit a Voluntary Cleanup Proposal to the KDHE following the scope of work contained in this section. The Voluntary Cleanup Proposal must compare a minimum of two alternatives, not including a "no action" alternative. The proposal must document the expected ability of each cleanup alternative to obtain the degree of cleanup and control of contaminants necessary to meet applicable cleanup levels. The Voluntary Cleanup Proposal must also select one of the proposed remedial alternatives as the preferred alternative and provide a full description and evaluation of the preferred alternative.

The Voluntary Cleanup Plan

KDHE will review the Voluntary Cleanup Proposal and determine if the preferred alternative is acceptable. Following KDHE's approval of the Voluntary Cleanup Proposal, the voluntary party will prepare a Voluntary Cleanup Plan following the scope of work contained in this section. Any pre-design work must be completed prior to submittal of the Voluntary Cleanup Plan. Should pre-design

work be necessary at a property, the voluntary party should submit an appropriate work plan to KDHE for approval before proceeding. Once an acceptable Voluntary Cleanup Plan has been submitted, the public will be formally notified and any comments received from the public must be considered before final approval is provided by KDHE. At KDHE's discretion, the preferred alternative may be altered to incorporate appropriate and substantive comments and issues raised by the public.

The Voluntary Cleanup Plan will essentially be a work plan for cleanup and/or monitoring at a property. The complexity of the plan will vary with each property. The plan may be as simple as a long-term monitoring plan or as complex as a detailed engineering design for an aggressive remediation system. The primary objectives of a Voluntary Cleanup Plan are:

1) All tasks necessary to implement the selected voluntary cleanup alternative must be described;

2) Detailed design plans and specifications for the full implementation of the cleanup must be provided, as well as an operation and maintenance manual;

3) All necessary easements and permits required for implementation of the cleanup must be identified and obtained;

4) The risk-based cleanup levels selected for the property must be summarized;

5) A plan to monitor the effectiveness of the cleanup during implementation and operation must be included; and,

6) A verification monitoring plan must be included.

The primary objectives of monitoring are to:

1) Provide continuous evaluation of property conditions including hydrogeologic conditions, fluctuations of contaminant levels in the various environmental media, etc.;

2) Evaluate the progress of ongoing remediation efforts;

3) Establish compliance with cleanup levels at the conclusion of cleanup;

4) Identify post-remedy changes in contaminant levels; and,

5) Provide a basis to justify issuance of a No Further Action determination.

The Voluntary Cleanup Report

A Voluntary Cleanup Report will be submitted to KDHE when the cleanup levels contained in the Voluntary Cleanup Plan have been attained. The voluntary party will know when the cleanup levels have been achieved through monitoring conducted consistent with the monitoring plan contained in the cleanup plan. In some cases, such as a property where the voluntary cleanup consists only of excavation and treatment or disposal of contaminated soil, the pre-established cleanup levels can be readily achieved, at which time the cleanup would be considered complete. Verification sampling is required before backfilling with clean or treated soil. In ground water cleanups, KDHE may require ground water monitoring for an additional period of time to verify achievement of cleanup levels once the cleanup level is initially reached.

Generally, the Voluntary Cleanup Report must demonstrate that one or more of the applicable criteria listed below have been achieved:

Ground Water and Surface Water Criteria:

1) Analytical results from indicator sampling locations, as contained in the KDHE-approved Voluntary Cleanup Plan, indicate concentrations of contaminants are below established cleanup objectives and have been maintained for four (4) consecutive, equally time-sequenced sampling episodes conducted under KDHE oversight over a period of not less than two (2) years; *or*

2) Analytical results from indicator sampling locations, as specified in the KDHE-approved Voluntary Cleanup Plan, do not exceed background[1] levels for four (4) consecutive, equally time-sequenced sampling episodes conducted under KDHE oversight over a period of not less than two (2) years.

Soil Criteria:

1) Analytical results do not exceed the pre-established soil cleanup levels for discrete sampling of the soil at locations and depths as specified in the KDHE-approved Voluntary Cleanup Plan.

2) Analytical results do not exceed background levels for discrete sampling of the soil at locations and depths specified in the KDHE-approved Voluntary Cleanup Plan.

[1] Background levels are defined for the purpose of the VCPRP to include concentrations of contaminants that are:
1) Naturally occurring levels, which are ambient concentrations of chemicals present in the environment that have not been influenced by humans; and
2) Anthropogenic levels, which are concentrations of chemicals that are present in the environment due to human-made non-property sources

Special Considerations:

1) In some instances, it may be infeasible to entirely remove soil contamination at a property. The voluntary party may still be able to petition KDHE for a No Further Action determination if the property can be demonstrated to meet the following conditions: an effort must be made to isolate the contamination from future leaching or surficial exposure, as through capping, stabilization, or institutional controls; the voluntary party must demonstrate that no continuing sources of contamination exist at the property; and the voluntary party must have conducted no less than two years of ground water (or surface water, as appropriate) monitoring subsequent to the soil remedy to verify that the remnant soil contamination has not impacted ground water or surface water and is not likely to do so in the future.

2) If the above criteria do not apply to a property, the voluntary party may still petition for a No Further Action determination by providing appropriate justification and a concise description of all special circumstances for the subject property.

Once the criteria listed above for completion of the voluntary cleanup have been achieved, the voluntary party must submit the Voluntary Cleanup Report to KDHE for review and approval. The cleanup report will contain adequate documentation to verify that one of the criteria above has been achieved. A suggested format for a Voluntary Cleanup Report is included in this section.

KDHE will review the Voluntary Cleanup Report and will notify the voluntary party by letter of the outcome of the review. Additional information may be requested by KDHE prior to final approval of the Voluntary Cleanup Report. KDHE expects the report to be brief and concise, referencing the Voluntary Cleanup Plan, Voluntary Cleanup Investigation Report, and monitoring reports to the extent practical. The Voluntary Cleanup Report will enable KDHE to determine that the cleanup has been completed and that verification sampling is now appropriate prior to final closure of the property.

VOLUNTARY CLEANUP PROPOSAL
Scope of Work

INTRODUCTION

This Scope of Work provides guidance for preparing a Voluntary Cleanup Proposal. If KDHE determines that cleanup or monitoring is necessary to address contamination at a property, the voluntary party will prepare a Voluntary Cleanup Proposal in accordance with this scope of work and K.A.R. 28-71-9(d) for KDHE's review and approval. The objectives of the proposal are to describe cleanup alternatives for the property and the voluntary party's process and rationale used to select a cleanup alternative that will meet the following objectives:

1) Be protective of human health and the environment for documented present and future land uses;

2) Meet all applicable state standards and guidelines for cleanup or meet risk-based cleanup goals calculated through an approved property-specific risk analysis; and,

3) Evaluate remedial alternatives that are proven reliable and economically and technically feasible.

The Voluntary Cleanup Proposal must compare a minimum of two alternatives, not including the "no action" alternative, document the ability of each remedial alternative to attain the degree of cleanup and control of contaminants required, and provide a full description and evaluation of the voluntary party's preferred remedial alternative. In developing the Voluntary Cleanup Proposal and comparing cleanup alternatives, the voluntary party may select one of three available approaches to determine required cleanup levels for contaminants at the property as outlined in K.A.R. 28-71-11(c) by:

1) Using KDHE-approved methods to determine background levels**;**

2) Using risk-based cleanup levels established by KDHE; or,

3) Conducting a property-specific risk analysis employing KDHE-approved formulas, exposure parameters, and land use scenarios.

Guidance for the above mentioned methods of determining cleanup levels are contained in the Risk-based Standards for Kansas Manual. The approach selected and resulting cleanup levels determined for the property must be approved by KDHE.

SELECTION OF CLEANUP ALTERNATIVES FOR EVALUATION

The process for comparing cleanup alternatives in the Voluntary Cleanup Proposal should consist of:

1) Developing an initial list of remedial alternatives and technologies that are applicable to the contaminants, the impacted media, and the potential exposure pathway(s), and that have the potential to meet the cleanup levels required for the property;

2) Establishing screening criteria, generally including effectiveness, implementability, cost, and other pertinent criteria, and applying the criteria to the initial list of remedial alternatives and technologies to derive a minimum of two cleanup alternatives that will be retained for further detailed evaluation;

3) Conducting the detailed evaluation based on prescribed criteria (discussed below); and,

4) Proposing a cleanup alternative which will meet established cleanup levels and is the most appropriate based on the evaluation process.

The initial screening of alternatives is not required, but is recommended if various plausible cleanup options exist. Initial screening may not be useful in some instances where available cleanup options are limited. If multiple media are impacted by contamination (for example surface soil, subsurface soil, and ground water), media-specific remedial alternatives may need to be evaluated and then combined into multiple media remedial alternatives for more detailed evaluation. For additional guidance and considerations on development of cleanup alternatives, refer to K.A.R. 28-71-11(a) through (g).

EVALUATION OF REMEDIAL ALTERNATIVES

Once the minimum of two cleanup alternatives (not including the "no action" alternative) have been selected for evaluation and comparison, the next step involves conducting an evaluation of the cleanup alternatives using consistent evaluation criteria that allow the alternatives to be analyzed individually and comparatively to document the rationale behind the selection of the voluntary party's preferred alternative. The criteria used for the detailed evaluation include:

1) **Overall protection of human health environment** - This criterion considers meeting cleanup levels for various impacted media, eliminating or mitigating direct or indirect risk exposure pathways, considers current and potential future land use scenarios, and considers short- and long-term protection.

2) **Compliance with federal, state, and/or local laws, regulations, and rules -** All aspects of the remedial alternative must adhere to any applicable laws, rules, or regulations. These types of requirements are referred to in federal guidance as "Applicable or Relevant and Appropriate Requirements" (ARARs). A listing of some common ARARs may be obtained from KDHE upon request.

3) **Long-term and short-term effectiveness -** Each alternative should be evaluated on its effectiveness in providing protection of human health and the environment. Short-term effectiveness refers to the effectiveness during the period of construction,

implementation, and active cleanup; long-term refers to effectiveness after the cleanup is complete. When considering effectiveness, emphasis should be directed toward the reductions in contaminant toxicity, mobility, and volume that each alternative will achieve.

4) **Implementability -** Refers to the feasibility of implementing a cleanup action considering technical and administrative requirements. Technical considerations include feasibility of constructing, operating, and maintaining cleanup systems and meeting technology-specific regulations. Administrative considerations generally include ability to obtain approvals from regulatory entities as would be required for discharge permits, disposal authorizations, etc.

5) **Cost -** The cost of implementing each cleanup alternative must be estimated for comparison. Costs to consider include capital costs (direct - construction, equipment, etc.; indirect - engineering, permit fees, start-up costs), future operation and maintenance (O&M) costs, monitoring costs, and other associated costs. If the remedial alternatives provide varying overall cleanup time frames, the future costing should account for the alternative-specific cleanup time frame.

6) **Community acceptance -** Anticipated issues or concerns the public may have regarding each remedial alternative must be considered. The VCPRP process requires public notification and invites public comment on the Voluntary Cleanup Plan (which follows the approved Voluntary Cleanup Proposal). Considerations for community acceptance of cleanup alternatives should be taken into account throughout the cleanup alternative development process.

SELECTION OF A PREFERRED CLEANUP ALTERNATIVE

Following the cleanup alternative development and evaluation process, the voluntary party will select and propose a preferred cleanup alternative to KDHE. The preferred remedial alternative will be described in the Voluntary Cleanup Proposal with documentation of the alternative selection and evaluation process.

VOLUNTARY CLEANUP PLAN
Scope of Work

This scope of work presents the recommended content and format for the Voluntary Cleanup Plan. **Please note that this guidance is comprehensive and does not segregate work plan content or format based on the varied contamination classification levels or the type of cleanup.** Since many of the content items are common for all contamination classification levels and the primary difference between classification levels relates to the affected environmental media, this guidance should be used and adapted as appropriate for the specific conditions at the property being addressed.

1.0 Introduction

1.1 Property Background/History - Provide a very brief overview of the property background and investigative history including information such as the property location (city, county, legal description, street address, etc.), what the property is used for and what it has been used for in the past, and other pertinent information about the property. The Voluntary Cleanup Investigation may be referenced in lieu of repeating the information in the Voluntary Cleanup Plan.

1.2 Objectives - Provide a concise overview of the objectives of the Voluntary Cleanup Plan, the conceptual remedial approach for the property, and how the remedial approach is intended to accomplish the objectives of the cleanup with specific reference provided to contaminants and sources, contaminated media, migration pathways, exposure pathways, and applicable cleanup levels. The Voluntary Cleanup Proposal may be referenced in lieu of repeating the information in the Voluntary Cleanup Plan.

2.0 Cleanup Tasks

This section of the Voluntary Cleanup Plan describes the procedures for implementation of remediation or monitoring. Detail sufficient to meet KDHE's information needs for approval of the plan must be included. Voluntary parties must adapt the required content outlined in this guidance to the specific conditions at their property.

2.1 Definition of Cleanup - This section will define the proposed voluntary cleanup. Specifics on the nature, extent, and concentrations of contamination to be cleaned up should be included as well as a description of the general nature of the remediation to be implemented and cleanup goals to be achieved. Reference to an approved Voluntary Cleanup Investigation Report or Voluntary Cleanup Proposal may be made in lieu of repeating the information in the Voluntary Cleanup Plan.

2.1.1 Soil Contamination - Discuss the vertical and horizontal extent and degree of contamination with reference to appropriate figures.

2.1.2 Ground Water Contamination - Discuss the vertical and horizontal extent and degree of contamination with reference to appropriate figures.

2.1.3 Cleanup Objectives - *This is the most important part of a Voluntary Cleanup Plan*. In this section, the voluntary party will present the rationale for deciding which of the contaminants described in 2.1.1 and 2.1.2 will need to be cleaned up and the specific cleanup level for each contaminant. Cleanup objectives will be risk-based and the voluntary party will use the Risk-Based Standards for Kansas (RSK) in determining what levels of contamination will become the cleanup objectives. Basically, there are three levels or Tiers for determining cleanup objectives:

1) Tier 1 cleanup objectives are determined only for contaminants that are naturally occurring in the environment. In these cases, a voluntary party may choose to clean up a property to background levels for appropriate contaminants. Methods for determining background levels are included in RSK.

2) Tier 2 cleanup objectives consist of specific levels of each contaminant for soil and water media in non-residential and residential land use settings that may remain at a property after cleanup. These values are based on risk to human health and the environment and are tabulated in RSK. KDHE anticipates that using the pre-established contaminant levels will be the most common method for setting cleanup objectives for anthropogenic contaminants.

3) Tier 3 cleanup objectives are based on a property-specific risk analysis performed by the voluntary party in consultation with the VCPRP project manager. Performing a Tier 3 analysis will require considerably more information than either the Tier 1 or Tier 2 methods. Tier 3 evaluations must be performed with KDHE oversight.

2.1.4 Cleanup Approach - Discuss the remedial approach to be used, relative to the specifically identified areas of contamination discussed in 2.1.1 and 2.1.2, to reach the cleanup objectives selected in 2.1.3. The remedial approach will vary significantly between properties and this

overview will need to be tailored to the specific property. Listed below are some common remedial actions and approaches.

2.1.4.1 Soil Remediation/Excavation

1) Describe areal extent and depth to be excavated and portray those areas on figures;

2) Describe contaminated soil handling and disposal procedures;

3) Describe any on-property treatment, land farming, stockpile areas, treatment piles, etc., including treatment facilities/methods; and,

4) Describe backfilling and regrading to be performed, including origin and analytical testing of replacement soil.

2.1.4.2 Soil Remediation/In-situ Treatment

1) Provide descriptions, maps, and cross-sections showing number and location of wells, designed radius of influence, cleanup levels to be achieved, etc.;

2) Provide the rationale behind proposed well construction designs and provide an illustration of a typical proposed well construction;

3) Describe overall system for injection or extraction, including rates and volumes;

4) Describe nature and purpose of any injectate other than ambient air;

5) Describe and illustrate system components, including blowers, pumps, and off-gas treatments; and,

6) Describe target cleanup goals, time frames, and effluent concentrations.

2.1.4.3 Ground Water Remediation

1) Describe and illustrate treatment processes, the number and location of wells, purpose of wells, and construction of wells;

2) Describe nature and purpose of any proposed injectate;

3) Describe major treatment system components and illustrate the hydrogeology of the system, including injection or withdrawal rates and expected capture zones or areas of influence of the wells;

4) Discuss cleanup goals, performance expectations, and time frames; and,

5) Discuss effluent concentrations and the proposed handling, treatment, and disposal of effluent.

2.1.4.4 Other Cleanup Methods

1) Provide a detailed description of the remedial process and technology;

2) Discuss the remedial objectives for the property and demonstrate that the chosen process will achieve the objectives;

3) Discuss past results of the remedial process at other properties where it has been successfully employed; and,

4) Describe the monitoring required to determine progress and effectiveness of the proposed process.

2.1.5 Permitting/Regulatory Involvement - Describe all applicable permitting requirements for the proposed remedial project and all local, state, and federal regulatory requirements. Typical permits to be addressed include air discharge permits, solid waste disposal authorizations, ground or surface water appropriation permits, UIC permits for injection or reinjection, NPDES permits for discharge to surface water, local permits for discharge to sanitary sewers, etc. Other requirements to be identified in this section include local building, plumbing, and electrical permits for the project, necessary easements and/or variances and access agreements.

2.1.6 Remediation System Plans and Specifications - If the remedial approach will involve installation of mechanical systems such as soil venting systems, ground water recovery wells, treatment systems, etc., plans and specifications for the mechanical systems must be included in or accompany the Voluntary Cleanup Plan. Engineering drawings and specifications must be submitted to KDHE for review and comment prior to soliciting bids. Project documents must contain sufficient information to allow KDHE reviewers to determine if the proposed system(s) will function as intended and achieve remedial objectives. A Kansas-registered Professional Engineer must seal engineering designs.

2.1.6.1 Maps - Plans must include an appropriate property base map, maps and cross-sections showing vertical and horizontal extent of contamination, and maps portraying the physical relationship of the mechanical systems, wells, etc., to the contamination. Figures provided in previous sections of the plan may be referenced.

2.1.6.2 Equipment Specifications - Manufacturers' cut sheets with performance data for major equipment items must be provided.

2.1.6.3 Process and Instrumentation Diagram (P&ID) - A P&ID must be provided depicting flow rates, system interlocks, major system components, control valving and metering, etc.

2.1.6.4 Wiring Diagram - An electrical wiring one-line or ladder diagram must be provided. A table must be included on the drawing to provide the following information about motors, motor starters, circuit breakers, etc.:

1) The type of power supply (phase, cycles, voltage, and amperage capacity);

2) Circuit breaker or fuse ratings, motor control sizes, controls, wire sizes, and load for each branch of the circuit; and,

3) Interlocks, meters, remote controls, modems, computers or control logic systems, and safety or alarm systems.

2.1.6.5 Property Layout - A diagram must be provided to depict piping sizes and locations, well locations and construction, discharge locations, and all other pertinent remedial system property features.

2.1.6.6 Building Plans - Elevation and plan views of any equipment buildings to be constructed at the property must also be provided.

2.1.6.7 System Design Criteria - Engineering design information must be provided. This type of information includes, but is not limited to:

1) Calculations of head loss for piping (rationale for piping size selection);

2) System head loss calculations and rationale for the selection of pumps, blowers, motors, and other major system components;

3) Emissions and/or effluent estimation calculations; and,

4) Specific system operational parameters (e.g., air-to-water ratios for strippers, allowable flow rates, breakthrough times, pressure capacities, ASME code stamp requirements for GAC vessels, required construction materials for all pertinent equipment, recommended or required instrumentation for equipment, pretreatment requirements, etc.).

2.1.6.8 Operation and Maintenance (O&M) - The Voluntary Cleanup Plan must clearly indicate that an O&M manual will be prepared and submitted and must include a description of the manual's proposed content. The O&M manual will not need to be submitted to KDHE with the Voluntary Cleanup Plan, but should be submitted after system installation and startup in accordance with the schedule provided in the Voluntary Cleanup Plan. The manual should describe all operational procedures and maintenance requirements for any remedial system(s) installed, including detail on what O&M is required for the system, the frequency for O&M tasks, and who will be conducting those tasks.

2.1.6.9 Startup Report - A final Startup Report must be submitted within 60 days following startup of the remedial system(s). The voluntary party may submit the Startup Report and the O&M manual together, in accordance with the schedule provided in the Voluntary Cleanup Plan. The Startup Report is to serve as official notice to KDHE that the system has been installed and

active remediation has commenced, and that the system is operating as designed.

If remedial systems were installed as designed, a statement to that effect will be required. If "As-Built" drawings are prepared, these should be submitted also. Any major modifications to the design upon system installation should be described in detail with supporting drawings, diagrams, and specifications as well as rationale for the changes. The Startup Report may also serve as the initial monitoring report, in which case the content listed in Section 2.1.6 should be included. Suggested content for the Startup Report is listed below:

1) Date startup actually occurred;

2) Description of any "fine tuning" conducted on the system and the resulting operational parameters that were identified;

3) Discussion of any modifications that were made to remedial systems upon installation along with the rationale for modifications;

4) A description of problems that occurred during construction of the remedial system(s) or upon startup;

5) A tabulation of system monitoring data such as influent, effluent, and emissions analyses;

6) Ground water potentiometric surface maps, if applicable, which will demonstrate the capture radius of recovery wells;

7) Documentation that all necessary permits were obtained including copies of the permits;

8) Discussion of the actual system operation and effectiveness as compared to the predicted performance of the remedial design;

9) Boring logs, well construction diagrams, laboratory reports for analytical work, chain-of-custody forms, etc.;

10) A discussion of volumes and final handling methods for wastes generated during remedial system implementation; and,

11) A general summary of the implementation and an assessment of whether the remedial approach will achieve the remedial objectives.

2.1.7 Monitoring Requirements/Plans - The monitoring requirements listed within this section generally pertain to property monitoring in lieu of remediation, monitoring during remediation, and post-remedial verification monitoring. These monitoring requirements will pertain to monitoring of ground water conditions and quality, and possibly other media such as soil vapor extracted via a remedial system. The voluntary party may have to adapt these requirements to develop an acceptable monitoring plan for their property.

A monitoring plan must be developed in conjunction with the Voluntary Cleanup Plan. KDHE does not intend the monitoring plan to be a separate document; i.e., if the Plan contains remedial system designs, the associated remedial and post-remedial monitoring strategy should be included as a separate section within the plan. The Voluntary Cleanup Plan should simply present a monitoring plan if monitoring is the selected remedial approach. The purpose of the monitoring portion of the plan will be to present a monitoring strategy to achieve property-specific monitoring objectives. After monitoring has been conducted for some time, it may be appropriate to either increase or decrease monitoring points, frequencies, or analytes. The monitoring plan should, at a minimum, address the elements listed below:

2.1.7.1 Monitoring Objectives - An identification of the monitoring objectives for the specific property.

2.1.7.2 Monitoring Points - The points of the system to be monitored should be documented. This includes wells and/or remedial system operational parameters to be sampled.

2.1.7.3 Monitoring Schedule - Monitoring should be conducted at an adequate frequency to achieve monitoring objectives. Monitoring frequencies may vary for different groupings of sampling points at a property, for instance, system operation parameters might be sampled monthly while ground water wells are sampled only quarterly. A rationale for each monitoring frequency should be included.

2.1.7.4 Monitoring Parameters - Identify what will be monitored, for example:

1) Static water levels relative to mean sea level datum;

2) Contaminants to be analyzed for;

3) Anticipated levels of contaminants in media at sampling points; and,

4) Operational parameters for the remedial system(s) and their ramifications for system modifications.

2.1.7.5 Standard Operating Procedures (SOPs) - Sampling for monitoring should be carried out using SOPs in accordance with the Quality Assurance Project Plan (QAPP). Documentation of the strategy for maintaining the efficacy and representativeness of the monitoring program should be included. Laboratory analytical methods chosen for monitoring the contaminants of interest should also be included.

2.1.7.6 Monitoring Reports - A monitoring report must be submitted after each monitoring event to provide the results from monitoring and an evaluation of the effectiveness of the remediation and/or monitoring system. The proposed format and content for monitoring reports should be provided in this section of the Voluntary Cleanup Plan. Each monitoring report should contain the following information, as appropriate:

1) A discussion of the monitoring event, which should include property conditions, date and time, problems, deviations from approved procedures, a general description of monitoring work conducted, etc.;

2) Tabulated data such as static water levels, purging parameters, analytical results, and remedial system operational parameters. Tables should include the most recent data as well as all historical data for comparison;

3) Ground water potentiometric surface maps;

4) Contaminant concentration isopleth maps;

5) Supporting documentation such as laboratory reports and chain-of-custody forms; and,

6) A summary of monitoring results, a discussion of the effectiveness of remedial efforts by comparison of recent and past data, a discussion of any changes in contaminant concentrations or distribution, and other information to demonstrate compliance with the established monitoring objectives.

2.1.8 Investigative Derived Wastes and Other Wastes - The Plan must address how wastes generated from installation and operation of remedial systems will be characterized, treated, or disposed of.

3.0 Schedule

Provide a detailed schedule of proposed voluntary cleanup activities which specifically identifies the dates and time frames for implementing and completing the significant tasks of the cleanup.

4.0 References

Provide a comprehensive listing of resources referenced for preparation of the Voluntary Cleanup Plan.

5.0 Tables

Provide tables of information and data for quick reference within the Voluntary Cleanup Plan. Tabulated data such as field screening data, laboratory analytical data, water level data, and well completion data should be included.

6.0 Figures

At a minimum, the following figures must be included in the Voluntary Cleanup Plan. All figures must have a scale.

1) A figure based on a USGS 7.5' topographic quadrangle map depicting the property location;

2) A property map that depicts the entire property, buildings, and pertinent property features, surrounding properties, source areas, and potentially impacted receptors;

3) Any figures from previous investigation reports such as potentiometric surface maps or figures depicting known source areas and known extent of contamination; and,

4) Any figures necessary to illustrate remedial approaches, such as a figure depicting areas to be excavated accompanied by a figure to depict verification sampling locations, etc.

7.0 Appendix A - Quality Assurance Project Plan

A Quality Assurance Project Plan (QAPP) must be developed to describe the policy, organization, functional activities, and quality control/quality assurance protocols necessary to achieve the level of quality of data required for its intended use. If KDHE approved the Voluntary Cleanup Investigation Work Plan and its required QAPP, reference to the VCI Work Plan QAPP, as appropriate, is acceptable. The QAPP must contain the following information:

7.1 Key Personnel - Key personnel or organizations that are necessary for each activity during the voluntary cleanup, along with their responsibilities, must be identified. (This information may be presented in a table).

7.2 Quality Assurance Objectives for Data - The degree of accuracy of sample analysis and how this degree of accuracy will be achieved must be identified. Also within this section, the numbers and types of QA/QC samples such as trip blanks, equipment blanks, and replicates and the frequency at which they will be collected must be identified.

7.3 Sample Custody - How chain-of-custody will be maintained for samples collected for laboratory analysis must be described.

7.4 Analytical Procedures - Laboratory methods to be used for analysis of samples must be specified.

7.5 Laboratory QA/QC - Analysis must be completed by an environmental laboratory certified by the Kansas Health and Environmental Laboratory. Such a laboratory should provide a description of the internal QA/QC program to be followed by the laboratory. This information should be included in the QAPP.

7.6 Data Validation and Reporting - A description of how laboratory results will be validated should be included here. This describes how data is reviewed after being received from the laboratory to determine whether QA/QC protocol goals have been met. The data validation summary must include sufficient detail to allow KDHE to verify that data has been properly validated. The summary must address the data validation process, including discussion of results from analysis of replicates, laboratory or method blanks, matrix spikes and matrix spike duplicates, trip blanks, field blanks, equipment (rinsate) blanks, and any other QA/QC samples. The discussion should identify how deviations in the QA/QC sample results may affect the usability or interpretation of project sample results.

8.0 Appendix B - Field Sampling Plan

The Field Sampling Plan should describe field activity, remediation program sampling, or monitoring sampling in detail and should consist of the following sections.

8.1 Sampling Objectives - Describe the specific objectives of each sampling effort relative to the intended use of the data; e.g., for field screening of soil samples collected while drilling, indicate the objective of the soil sampling and how the field screening data will be used. Alternatively, field screening as part of an excavation remedial effort might be conducted to determine when verification samples should be collected.

8.2 Sampling Locations and Frequency - Define what, when, and where samples will be collected. This should include samples for field screening and samples for laboratory analysis relative to all media being sampled.

8.3 Sampling Equipment and Procedures - Define how samples will be collected. This should contain or refer to sampling SOPs, or otherwise describe the sampling process. Any equipment used should be identified and described. Sampling QA/QC procedures such as decontamination procedures, should be described.

8.4 Sample Handling and Analysis - Describe sample handling tools, containers, preservation methods, shipping requirements, holding times, and chain-of-custody procedures.

9.0 Appendix C - Health and Safety Plan

A Site Health and Safety Plan consistent with OSHA requirements must be included with the Voluntary Cleanup Plan. This can be similar to the Health and Safety Plan required for the Voluntary Cleanup Investigation Work Plan.

VOLUNTARY CLEANUP REPORT
Scope of Work

1.0 Introduction

1.1 Property Information - Briefly summarize information about the property, including the property name, location, and general history relative to the Voluntary Cleanup and Property Redevelopment Program, including dates of voluntary actions such as submission and approval or execution of the agreements, cleanup investigations, cleanup plans, etc. Present a brief discussion of why cleanup or monitoring was necessary for the property, including the identification of contaminants of concern, concentrations, actual or potential receptors, etc.

1.2 Cleanup Objectives - Summarize the cleanup objectives selected in the Voluntary Cleanup Plan as approved by KDHE.

2.0 Documentation/Completion of Cleanup

The following is a general outline of the type of information necessary to document that voluntary cleanup objectives contained in the Voluntary Cleanup Plan have been achieved. The information provided in this document should clearly demonstrate that the cleanup completion criteria have been met. The information contained in the Voluntary Cleanup Report must be sufficient for KDHE to justify proceeding to the verification sampling stage of final closure. Reference should be made to previous VCPRP documents, when appropriate. When analytical data is included to support termination of the cleanup effort, the results of all sampling in the time period required for monitoring in the Voluntary Cleanup Plan should be included; i.e., if three years of quarterly sampling where required, include all three years of data in this document.

2.1 Soil Contamination - Provide an overview of cleanup activities implemented to address soil contamination. Analytical data, including both field screening and laboratory results, should be tabulated and included in the "Tables" section. Supporting figures should be referenced in the text and provided in the "Figures" section. The type of information to be provided in this section includes, but is not limited to:

1) Total volumes of soil excavated, treated, and/or disposed of;

2) Reference to a figure showing locations of soil excavation;

3) A discussion of field screening and/or laboratory analytical results from sampling which verify that cleanup levels were achieved, or any other analytical work conducted as part of the remedial implementation;

4) A discussion of results from implementation of other types of soil remediation, such as soil venting, bio-venting, etc.;

5) Analytical results which demonstrate cleanup levels have been achieved, such as samples from confirmatory soil borings conducted after soil venting is considered complete, etc.; and,

6) Other information as appropriate for the implemented remediation to verify that cleanup levels have been achieved.

2.2 Ground/Surface Water Contamination - Information requested in this section should be provided for any voluntary cleanup where ground water or surface water monitoring was conducted, or where monitoring was conducted in lieu of remediation. The information to be submitted includes, but is not limited to:

1) Total volumes of water diverted, treated, and/or disposed of;

2) Reference to a figure showing monitoring locations;

3) A discussion of field screening and/or laboratory analytical results from sampling which demonstrate that cleanup levels were achieved, or any other analytical work conducted as part of the cleanup implementation;

4) A discussion of the property setting and physical characteristics (such as hydrogeology, ground water flow direction, etc.) which when considered with the analytical data, support that cleanup objectives have been achieved;

5) Volumes of contaminants removed during the remediation; and,

6) Other information necessary for KDHE to verify that cleanup levels have been achieved.

3.0 Summary and Conclusions

Provide a summary of the overall voluntary cleanup effort and a brief statement of conclusions. The summary should clearly demonstrate why a No Further Action determination should be made for this property.

4.0 Tables

Provide tables of information, such as field screening and/or laboratory data, as appropriate, to demonstrate that cleanup objectives have been achieved.

5.0 Figures

Figures should be included to illustrate key issues relative to the voluntary cleanup. Potential figures to be included are:

1) A figure based on a USGS 7.5' topographic quadrangle depicting the property location;

2) A property map that depicts the entire property, buildings, and pertinent property features, surrounding properties, source areas, and potentially impacted receptors;

3) Figures to depict remediation related features such as areas excavated, actual locations of verification sampling, etc.;

4) Figures to depict post-remedial property conditions such as contaminant concentrations isopleths, water table maps, etc.; and,

5) Any figures necessary to illustrate other key aspects of the property-specific voluntary remediation or monitoring.

6.0 Appendices

Attach appendices to the Voluntary Cleanup Report to provide specific information about the cleanup, as necessary. Appendices to be provided include;

1) An appendix containing laboratory reports and QA/QC information - this would pertain to analyses for which such supporting documentation has not been previously provided. Examples would include supporting documentation for verification sampling conducted as part of contaminated soil excavation, treatment, and/or disposal, or the latest round of ground water sampling, etc.; and,

2) Although not required, photographs of key activities conducted during the voluntary cleanup could provide additional support for a No Further Action determination.