ATTACHMENT 11
CORRECTIVE MEASURES IMPLEMENTATION
SCOPE OF WORK

INTRODUCTION

The Final Corrective Measure(s) Decision and Response to Comments (FDRTC) issued by the Kansas Department of Health and Environment (KDHE) identifies the remedial action(s) that will be implemented to address residual waste and contamination of environmental media, and prevent or eliminate exposure to human and ecological receptors from site-related contaminants of concern (COCs). The selected remedy is planned, designed, constructed**,** and implemented during the Corrective Measures Implementation (CMI) stage, comprised of the Corrective Action Plan (CAP) and Corrective Action (CA) phases, with oversight provided by KDHE. Face-to-face meetings or teleconferences between KDHE and Permittee/Respondent are strongly encouraged to facilitate achieving consensus on approach and overall streamlining of the corrective action process.

CMI (CAP/CA) OBJECTIVES

The primary objectives of the CAP phase are described as follows:

1) To provide a CMI Work Plan consisting of a preliminary design of the CA and a description of the tasks necessary to implement the corrective action consistent with the FDRTC;
2) To obtain additional data, if necessary, to support the development of the detailed design plans and specifications;
3) To provide detailed intermediate, pre-final and final design plans and specifications including an Operations and Maintenance (O&M) Plan for the remedial system;
4) To provide a Contingency Plan, as required by KDHE, that identifies an alternative corrective action to be implemented in the event of a significant failure of the remedial system;
5) To identify and obtain necessary easements and permits required for the implementation of the corrective action; and,
6) To provide a Site Monitoring and Performance Evaluation Plan to monitor the effectiveness of the corrective action.

The CMI Work Plan and associated design documents may vary in detail and delivery strategy (e.g., preliminary (10%), intermediate (30-50%), pre-final/final (90-100%)) depending on project-specific needs. For example, in the case of complex design efforts, preliminary and/or intermediate design submittals may be appropriate in advance of the pre-final/final design stage. For a simple remedy, it may only be necessary to submit a draft and final CMI Work Plan where no up-front design is explicitly warranted; instead, a report is provided after CA implementation/installation fully documenting the effort with any as-builts. Often times, the first design submittal seems to actually be the pre-final/final design equivalent. At the discretion of KDHE, instead of submitting with the CMI Work Plan and associated design package, the O&M Plan as well as the Site Monitoring and Performance Evaluation Plan may be submitted after CA

implementation/start-up with the as-builts. KDHE may also require upfront or later submittal of a Contingency Plan, primarily if identified explicitly in the FDRTC, or as project needs might dictate based on site-wide and performance monitoring. Typically, in these circumstances, the expectation is that a contingency be identified in general terms only with a Contingency Plan developed if/when the need arises at a later date as requested by KDHE. If the contingent remedy represents a fundamental change from the original selected remedy, then community involvement activities and/or decision document amendment may be necessary.

The primary objectives of the CA phase are described as follows:

1) To implement the CMI Work Plan and associated design documents as approved by KDHE;
2) To operate and maintain the corrective action system as described in the approved O&M Plan;
3) To evaluate and monitor the performance of the corrective action as described in the approved Site Monitoring and Performance Evaluation Plan;
4) To determine whether corrective action objectives (CAOs) or media cleanup goals have been attained, or are likely to be attained;
5) To confirm attainment of CAOs or media cleanup goals by conducting post-corrective action monitoring as described in the approved Site Monitoring and Performance Evaluation Plan;
6) To implement the approved Contingency Plan, as required by KDHE, to design, install and operate additional or alternative corrective action measures in the event the implemented corrective action is unable to attain corrective action goals within a reasonable timeframe as determined by KDHE;
7) To document and report to KDHE all activities performed pursuant to the corrective action; and,
8) To submit a final report to KDHE for approval which briefly describes the corrective action implemented at the site, and provides the appropriate data documenting that site-specific corrective action goals have been attained.

Depending on the complexity of the selected corrective action, the CMI Work Plan and associated design documents may need to address operation and maintenance via an O&M Plan as well as remedial system performance monitoring and site-wide monitoring (e.g., plume control) via a Site Monitoring and Performance Monitoring Plan. As discussed above, KDHE may also require upfront or later submittal of a Contingency Plan.

CMI (CAP/CA) PLANNING/IMPLEMENTATION/REPORTING

CMI Work Plan/Design—In general, the CMI Work Plan and associated design documents will include, at a minimum, a summary of available site information and available investigation results; a detailed description of the proposed corrective action; CAOs or media cleanup goals; depending on the complexity of the proposed corrective action, complete design specifications and drawing/schematics, including any relevant figures and/or site system engineering layouts (e.g., process flow diagram, piping and instrumentation diagram, etc.) and engineering design basis; cost estimate; and, a detailed working schedule presented graphically in the form of a milestone chart (e.g., Gantt chart) or critical path diagram to show the duration and

interdependencies of the various activities. As necessary, the detailed working schedule must be updated and submitted to KDHE as part of the routine reporting requirements.

The exact elements, content and delivery strategy of the CMI Work Plan and all associated design documents will be determined by KDHE in consultation with the Permittee/Respondent. Typically, a preliminary (10%) design package will minimally include a design delivery strategy, preliminary construction schedule, specifications outline, preliminary drawings, design basis report, and a detailed statement of how all applicable regulatory requirements will be met. An intermediate (30-50%) design package will include an updated construction schedule, preliminary specifications, intermediate drawings, updated design basis report, and updated requirements evaluation. A pre-final/final (90-100%) design package will include updates of the above-mentioned items plus pre-final/final design specifications/drawings and design basis report/design analysis. Unless submitted separately, the CMI Work Plan/Final Design Package must address O&M and performance monitoring needs as well as shakedown testing and startup procedures. There may also be a need for development of a Construction Quality Assurance Plan and a separate Health and Safety Plan for CA implementation.

The Permittee must describe in detail all tasks necessary to acquire additional data to support the development of a CMI Work Plan/Final Design Package and to construct, implement, and monitor the performance of the corrective action. All necessary tasks shall be documented and described in adequate detail to clearly state the manner in which they will be implemented and reported. The tasks shall address obtaining appropriate easements, permits, etc. and, where wastes or hazardous substances, pollutants, or contaminants will remain on site at concentrations that disallow unlimited use and unrestricted exposure, include those tasks necessary for establishing institutional controls as approved by KDHE.

Additional Data Acquisition Plan (Optional)—If additional data collection is needed to prepare the CMI Work Plan or support the design effort, an Additional Data Acquisition Plan must be submitted in advance for KDHE approval. The intent of any additional data acquisition is to provide sufficient data to support the subsequent remedial design and/or start-up of the KDHE selected remedy. All data gathering activities must be completed in a manner consistent with available KDHE policy and guidance. Analytical data must be collected of appropriate data quality and quantity to facilitate comparison to applicable threshold levels as established in KDHE's *Risk-Based Standards for Kansas RSK Manual* (RSK Manual). All data should be validated at the appropriate field or laboratory quality control level to determine whether it is appropriate for its intended use. At KDHE's discretion, reporting associated with additional data gathering activities may be reported separately, incorporated into the CMI Work Plan/Final Design Package or incorporated into the CMI Report.

Site Monitoring And Performance Evaluation Plan—Whether included in the CMI Work Plan/Final Design Package described above or prepared separately, a Site Monitoring and Performance Evaluation Plan is intended to document the activities necessary to evaluate the effectiveness of the corrective action, in terms of remedial system performance monitoring and site-wide monitoring, as appropriate. At a minimum, the Site Monitoring and Performance Evaluation Plan shall include:

- a description of the site-specific CAOs or media cleanup goals;
- a description of the remedial system operations that will be evaluated and identification of criteria that will be used to evaluate system performance;
- frequency, methods, and rationale for site monitoring;
- a description of the environmental media to be monitored (groundwater, surface water, soil, soil vapor, indoor air, etc.);
- a description of quality assurance/quality control (QA/QC) considerations for the laboratory and field;
- identification of institutional controls that will be inspected/monitored;
- a plan for evaluating changes in land use of impacted areas that may alter the effectiveness of the corrective action; and,
- a description of reporting methods, format, and frequency.

O&M Plan—Whether included in the CMI Work Plan/Final Design Package described above or prepared separately, an O&M Plan must be submitted for KDHE review and approval. To facilitate preparation of an O&M Plan, please refer to available U.S. Environmental Protection Agency (EPA) guidance entitled *Operation and Maintenance in the Superfund Program* (OSWER 9200.1-37FS; EPA540-F-01-004; May 2001), or as approved by KDHE. The intent is for any operator to be able to use the O&M Plan and clearly understand O&M procedures to be followed, documentation requirements and corrective measures to be taken dependent upon anticipated circumstances or upset conditions. Proper planning and advance contingencies are appropriate considerations to minimize remedial system downtime.

CA Implementation and Reporting—The corrective action selected for the site shall be implemented in accordance with the KDHE-approved CMI Work Plan/Final Design Package. Implementation of the corrective action shall proceed according to the KDHE-approved schedule. The Permittee/Respondent shall conduct a pre-construction inspection and meeting as well as routine inspections during CA implementation. Depending on the complexity and duration of the corrective action effort, KDHE may require submission of interim status reports on a periodic basis (e.g., weekly, bi-monthly, monthly, etc.) documenting CA activities. When construction is complete, Permittee/Respondent shall notify KDHE for the purposes of conducting a final inspection consisting of a walk-thru of the project site.

A Final CMI Report that documents the corrective action constructed or implemented at the site shall be submitted to KDHE for review and approval. KDHE should be consulted to determine the appropriate form or content of the Final CMI Report. Submission of the Final CMI Report should not be construed to constitute fulfillment of all obligations on the part of the Permittee/Respondent at a given site. Instead, the Final CMI Report more typically represents reporting of the remedial actions taken to that point in time, predominantly a reporting of the constructed or engineered systems. Depending on project needs, CMI-related reporting may also necessitate submission of a Corrective Measures Construction Complete (CMCC) Report and/or Corrective Measures Completion (CMC) Report.

Site Monitoring and Performance Evaluation Reporting—The effectiveness of the corrective action shall be monitored as specified, including schedule and frequency, in the KDHE-approved Site Monitoring and Performance Evaluation Plan. Site Monitoring and Performance Evaluation

Reports must be submitted to KDHE in accordance with the KDHE-approved Site Monitoring and Performance Evaluation Plan. The Site Monitoring and Performance Evaluation Reports must contain all of the information and data as described within the Site Monitoring and Performance Evaluation Plan, including a narrative description and/or graphic evaluation of the effectiveness of the corrective action as compared to the site-specific CAOs or media cleanup goals.

If the site monitoring and performance evaluation program demonstrates that the implemented corrective action is incapable of achieving corrective action goals within a reasonable timeframe as determined by KDHE, the Site Monitoring and Performance Evaluation Report should recommend modifications or augmentation to the existing remedial system that will enable the system to achieve the medial cleanup goals. KDHE must be notified within seven days of any significant changes that may diminish the effectiveness of the implemented corrective action to protect human health and the environment.

At a minimum, the Site Monitoring and Performance Evaluation Reports shall include:

- a narrative description and graphic illustration of the effectiveness of the corrective action;
- a description of system operations and performance;
- a system startup report and "as built" drawings of the remedial system (required for the first Site Monitoring and Performance Evaluation Report unless approved by KDHE to be reported separately);
- a description of repairs or modifications made to the corrective action system during the reporting period, as appropriate;
- laboratory analytical data including copies of laboratory reports and summary tables;
- contaminant isoconcentration maps;
- a tabular comparison of the current monitoring data to previous monitoring results;
- a figure illustrating the site and associated monitoring wells or other sample point locations;
- static water elevation measurements;
- a contour map of the water level elevation;
- a description of any deviations from the approved sampling procedures;
- results of QA/QC data and an evaluation of the validity of the analytical data;
- logs of any newly constructed site wells;
- an evaluation of the effectiveness of institutional controls implemented for the corrective action (monitoring frequency will be identified in the approved Site Monitoring and Performance Evaluation Plan);
- an evaluation of land use of the impacted area (monitoring frequency will be identified in the approved Site Monitoring and Performance Evaluation Plan);
- specific conclusions and recommendations (for further action or change) based on historical site monitoring and performance data trends; and, all other relevant site data collected during the reporting period.