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**CONDITIONAL APPROVAL OF BACKGROUND
SAMPLING PLAN**

04/07/92

**USEPA/DOE-FN
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LETTER**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

APR 13 4 40 AM '92

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REPLY TO THE ATTENTION OF:

Mr. Jack R. Craig
United States Department of Energy
Feed Materials Production Center
P.O. Box 398705
Cincinnati, Ohio 45239-8705

HRE-8J

RE: Conditional Approval of
Background Sampling Plan

Dear Mr. Craig:

The United States Environmental Protection Agency (U.S. EPA) has completed its review of the revised Background Sampling Plan submitted by the United States Department of Energy to meet both the requirements of the Resource Conservation and Recovery Act and the Comprehensive Environmental Response, Compensation, and Liability Act.

This revised plan incorporates the majority of U.S. EPA comments, and includes sampling ninety (90) locations of uncontaminated soils to estimate background. Also, this Plan does impact the Risk Assessment Workplan.

Therefore, U.S. EPA hereby approves the Plan pending incorporation of the attached comments, some of which may require modifications to the Risk Assessment WorkPlan.

Please contact me at (312/FTS) 886-0992 if you have any questions.

Sincerely,

James A. Saric
Remedial Project Manager

Enclosure

cc: Graham Mitchell, OEPA-SWDO
Pat Whitfield, U.S. DOE-HDQ
Dennis Carr, WMCO

(craig/rast)
action
response
to HRE-889-92
(3959)

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ATTACHMENT

U.S. EPA COMMENTS ON THE REVISED RCRA/CERCLA BACKGROUND SOIL SAMPLING PLAN

1. The statistical approach is generally sound, but it is not particularly conservative. A more conservative and possibly more appropriate approach would require comparing on-site concentrations to the lower tolerance limits of background, rather than to the upper tolerance limits of background as proposed in the sampling plan.
2. The proposed use of literature values for some background parameters in the Operable Unit (OU) 2 and 4 Remedial Investigation (RI) Reports may be acceptable. However, U.S. DOE must provide U.S. EPA with a list of proposed literature values for each parameter, the rationale for their use, and the applicability to the site. U.S. DOE should also provide information on how the actual data will be incorporated into the RI reports for OU 2 and 4.
3. Table 1 includes four radionuclides with risk-based cleanup goals lower than the listed analytical detection limit. U.S. DOE should discuss how this may affect decisions in the risk assessment and Feasibility Study.
4. Although U.S. DOE has estimated a seven month turnaround time for collection of the 90 samples and incorporation of the results into the Background Sampling Plan, the results from analysis of naturally occurring metals will take much less time to acquire. Therefore, U.S. DOE must incorporate the results of the naturally occurring metals analysis from background soils into the OU 2 and 4 RI Reports.
5. Add histograms to the list of descriptive statistics for on-site and off-site concentration data.
6. The Upper Tolerance Limit (UTL) approach is generally based on the assumption that background data are normally distributed, and such calculations will be sensitive to any deviation from normality. This matter should be discussed. Of particular concern is the potential impact of outliers in the background data on such a procedure. Consequently, a stringent approach to evaluating outliers is required. Specifically, it must be shown that an outlier was not the result of laboratory or field sampling error, and that a careful examination of the location of the outlying sample did not suggest any potential for a localized source of contamination. Regardless, the UTL calculations should be done with and without the outlying data point.
7. While not mentioned in the Plan U.S. EPA assumes the nonparametric test (Wilcoxon and Quantile) discussed by U.S. DOE in the RI/FS Risk Assessment Workplan dated February 4, 1992 are still to be conducted. They are needed for the planned data collection, particularly if all 90 background samples can be used in the calculations. If 30 or fewer samples can be used, the power of these tests will suffer appreciably.

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The draft statistical methods document by Gilbert and Simpson from which the nonparametric tests are drawn stresses the need to estimate the statistical power of the tests to detect excess contamination. This appears not to have been done. Power calculations must be included in the Plan. Also U.S. DOE should consider the assumptions of normality and common variance in making these calculations.

8. When a compound exceeds a risk-based level of concern but statistical tests fail to demonstrate exceedance of background, A second step in the statistical analysis is required. Specifically, tests are needed to indicate the amount of excess above background that is compatible with the data. Of most value are estimates of a confidence interval for the site mean concentration minus the background mean concentration for appropriate exposure averaging areas of the site. If the upper end of this range is large it means that the data, while not definitive, are consistent with an important increase above background. This information will increase the ability of the assessors to understand the uncertainties involved with background comparisons, which may be large. Therefore, confidence intervals should be added to the Work Plan.