



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

AUG 03 1999

REPLY TO THE ATTENTION OF:

DW-8J

Mr. Tom Brent  
Naval Surface Warfare Center  
EPD, Code 095 B-3260  
300 Highway 361  
Crane, IN 47522-5001

Re: Work Plan/QAPP Comments  
Base-Wide Background Soil  
Investigation

Dear Mr. Brent:

The United States Environmental Protection Agency (U.S. EPA) has reviewed the Work Plan and Quality Assurance Project Plan for the Base-Wide Background Soil Investigation dated May 1999.

The Work Plan and QAPP have been very well planned and are nearly approvable. Attached you will find U.S. EPA's comments. Please revise the Work Plan and the Quality Assurance Project Plan to address these comments.

If you have any questions regarding this matter, please contact me at (312) 886-7890.

Regards,

A handwritten signature in black ink, appearing to read "Peter Ramanauskas".

Peter Ramanauskas  
Environmental Engineer  
WMB, IL/IN/MI Section

Enclosure

Filename: Background Soil NOD.wpd

cc: Core Team Members: Bill Gates, SOUTHDIV (w/ encls)  
Christine Freeman, NSWC (w/o encls)  
Phil Keith, NSWC (w/o encls)  
Doug Johnson, CAAA (w/o encls)  
E.P. Johns, SOUTHDIV (w/o encls)  
Michelle Timmerman, IDEM (w/o encls)

Project Team Members: Allen Debus, USEPA (w/ encls)

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NOTICE OF DEFICIENCY  
Work Plan & Quality Assurance Project Plan, Revision 0, May 1999  
For Base-wide Background Soil Investigation  
Naval Surface Warfare Center  
Crane, Indiana

A. Work Plan Comments

*Comment 1:*

Change Carol Witt-Smith to Peter Ramanauskas in Table 1-1 and Figure 1-1. If a Field Operations Leader has been determined, include the information in Table 1-1 and Figure 1-1.

*Comment 2:*

Section 1.1.4 neglects the role of the Data Validation Coordinator (DVC) mentioned in section 9.2.2 of the QAPP. Also, who will perform data validation per section 9 of the QAPP?

*Comment 3:*

Referring to the last bullet mentioned on page 5-6, what is the overall time frame to collect all samples from a "given depositional environment"? Why not just mail the cooler after it each one is filled, respectively?

*Comment 4:*

Section 5.2.7 of the RFI Work Plan should refer to section 5 of the QAPP.

*Comment 5:*

The section presented on page 5-9 should be consistent with (in case it is not) and refer to the field corrective action portion of the QAPP.

*Comment 6:*

Section 4.2.3 states that the "assumption of equal variances for different data sets may not always be valid." This assumption could easily be tested using an F test of statistical significance. The result of an F test will show whether or not the variances are equal. Furthermore, the number of sample measurements determination procedure does not consider the probability of a Type II error or a false positive. It is suggested that a formula be used which considers both possibilities. This could easily be done especially if the variances are equal. If the variances are not equal (according to the recommended F

test), methods are available which take into consideration both false positive and false negative errors in determining how many sample measurements are needed.

*Comment 7:*

Section 4.2.4 states that random sampling is preferable. However, it is also claimed that several considerations, such as irregular terrain, may prevent random sampling. If the selected sampling locations in the BG Areas were selected non-randomly, random sampling within those areas may still be possible. For example, the initial sampling areas are found non-randomly. These areas should be larger than the actual size of a location needed for sampling. The next step would be to number subareas within the initial areas and randomly select subareas. The selected subareas would then be the locations of the sample measurements.

*Comment 8:*

On page 6-3 of Section 6.2 it is stated that outliers will be identified. Please provide details on outlier determination procedures. Furthermore, how will outliers be used or not used in subsequent analyses?

*Comment 9:*

On page 6-3 of Section 6.2 it is stated that the 95% Upper Tolerance Limits will be used as benchmarks for subsequent comparisons. These values would probably be excessively high and prevent finding differences between background and later results. The lower 95% tolerance limit may be more desirable. The use of the Wilcoxon Rank-Sum test is acceptable as long as there are five or more observations in each of the cells of a data display table. If this is not the case, an alternate procedure would be the Kruskal-Wallis One-Way Analysis of Variance.

B. Quality Assurance Project Plan Comments

*Comment 1:*

The use of a larger gram quantity of soil for digesting prior to analysis is an acceptable procedure. However, the Laucks laboratory staff should be consulted about this prior to analysis of samples. For if this procedure isn't performed, then a condition of our forthcoming QAPP approval will be considered to have been violated.

*Comment 2:*

Referring to section 3.1.3, page 3-2 of the QAPP, analysis of the MS replicate should also be discussed here as it defines a matrix spike analysis for metals in soil.

*Comment 3:*

Although I have this distinct impression, as mentioned on page 3-3, section 3.2.3 of the QAPP, the 1/20 and 1/10 frequencies of sampling for field and matrix spike QC samples should be founded on a matrix type. Matrix type should ideally factor in all the various soil types and horizons to be tested. So, per background type (depositional environment), there should be MS samples for the different sandy, clayey, and silty soils. Table 5-5 of the Work Plan should be revised to reflect this understanding. If the number of QC matrix spikes proves excessive, then perhaps some strategy could be devised such that the samples do reflect a disparate rather than a restricted range of soil types.

*Comment 4:*

Referring to section 3.3.1 of the QAPP, note that other criteria besides the CLP's National Functional Guidelines may be needed for the validation of tin data.

*Comment 5:*

Referring to page 3-6, section 3.5.1 of the QAPP, note that collection of samples will not necessarily reflect seasonal variations, although this section contains a short discussion of seasonal variations under the heading "Comparability". To what extent is there a need for seasonal data to reflect variations of soils metals background concentrations?

*Comment 6:*

Referring to section 3.6.2, page 3-7, the proposed decision rule emphasizes the proposed use of historical data, a need which was appropriately considered and rejected. Therefore, the decision rule should focus on data collection activities instead, now that it has been decided to proceed with a data collection activity.

*Comment 7:*

Referring to section 5.1, page 5-2 of the QAPP, note that there should also be a record made in the log book identifying the custody tape number or code.

*Comment 8:*

Referring to page 9-2, section 9.2.2 of the QAPP, that the role of the DVC was not mentioned in section 1 of the Work Plan. Also in this section, note that the term "risk assessor" is used, even though this person was not mentioned in the Project Organization section. Will this person's role be restricted to cases where unit data becomes compared to the background soil data? It would seem that reliance of risk assessments runs counter to the specific DQOs of the Background Soils study.

*Comment 9:*

A typo appears in section 11.2, first paragraph. See phrase, "...Personnel will be alert..."  
Change to "alerted".

*Comment 10:*

Based on the discussion found in section 12.2 of the QAPP, page 12-2, I am uncertain how the field duplicate samples will be collected. Will there be one container or two for the sample and its duplicate? Will the soil for each be blended in the field prior to collection, and if so, how vigorously? What is the "mixed sample" referred to in this section?