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**ADDENDUM TO THE
SITEWIDE EXCAVATION PLAN**

**FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD, OHIO**



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**U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE**

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REVISION A
DRAFT**

3.4.8 Precertification and Certification of Cultivated Areas

Several of the off-site properties surrounding the FEMP that need to be certified are either currently being cultivated or have previously been cultivated. Evaluations of subsurface (i.e., below 6 inches) soil concentrations of selected COCs in these areas are required to determine whether cultivation had any influence on the distribution of FEMP-introduced COCs. As a result, cultivated soil certification involves evaluations against impacted soil FRLs (i.e., FRL certification) and background soil concentrations (i.e., background certification) at various depths/zones. General regulatory requirements and the source of the background data set to be considered are summarized in the Fact Sheet for Operable Unit 5 – Background Subsurface Soil Conditions (DOE 2001). This subsection provides guidelines for conducting precertification and certification in cultivated areas.

The general activities to be followed during precertification of a cultivated area are outlined in Figure 3-15. Large-volume NaI detectors and portable HPGe instruments will be used to scan as much as possible of the remediation area per Section 3.3.3. In addition to the scanning, subsurface soil sampling will be conducted to determine representative concentration profiles of COCs to at least a 2-foot depth below the cultivated depth. Comparisons of COCs concentrations to background conditions will be conducted layer by layer (6 to 12-inch, 12 to 18-inch, 18 to 24-inch, etc.). The depth of the impacted zone will be determined based on this comparison. An impacted area is defined as any area that has received contamination from past site operations and/or clearly has above background conditions. Based on the COC levels, remediation may be deemed necessary for the impacted areas before the areas can be certified. Refer to Figure 3-5 and 3-11 for remediation implementation strategies.

Upon completion of remediation or in areas where remediation is not necessary, delineation of Group 1 and Group 2 CUs in the impacted zone can be conducted per Section 3.3.3.2 and Figure 3-8. Once the CUs have been delineated, the FRL certification sampling locations in each CU will be identified and surveyed in the field per Section 3.4.2 and Figure 3-9. In addition, at least four of the FRL certification sample locations per CU will be designated as background certification sample locations. Background certification samples will be collected at depth at these locations below the designated impacted zone. The background certification sample intervals can be either randomly chosen at depth or the entire background interval can be composited. The sampling design for FRL certification and background certification samples will be documented in each area-specific CDL and PSP.

1 FRL certification and background certification samples can be collected, analyzed, and validated
2 simultaneously per Figure 3-16. FRL certification statistical analyses and evaluations for the impacted
3 area CUs are conducted per Section 3.4 and Figure 3-10.

4
5 Statistical analyses for the background certification samples are conducted per Figure 3-17. If all the
6 background certification data in the entire area to be certified are less than the 95th percentile background
7 concentration for each COC, then the impacted area is not extended and the background area
8 below/outside the impacted zone is considered certified. If any background certification result equals or
9 exceeds the 95th percentile background concentration, statistics of the background certification data set
10 for each COC are evaluated. If all COC-specific background certification results are less than the
11 corresponding background population based on a population-to-population comparison (i.e., t-test or
12 Wilcoxon tests) or cannot be differentiated at 99 percent UCL, then the original impacted zone is not
13 extended and the zone below/outside the impacted area is considered certified.

14
15 If any COC-specific data population is higher than the background population, more statistical
16 evaluations of the data will be required. For example, all background certification data from any CU with
17 concentration(s) higher than the 95th percentile background concentration will be grouped into a subset for
18 evaluation. If the UCL of the mean of this subset of data for each COC is less than the 95th percentile
19 background concentration, then the original impacted area is not extended and the background zone
20 below/outside the impacted surface CU is consider certified.

21
22 If the UCL of the mean of this subset of data for any COC is greater than the 95th percentile background
23 concentration, then a portion of the originally designated background certification zone will be designated
24 as impacted. This newly designated impacted zone will require FRL certification per Figure 3-10. The
25 reduced background certification area will require re-analyses per Figure 3-17 using the remaining
26 background certification data to confirm that background conditions exist.

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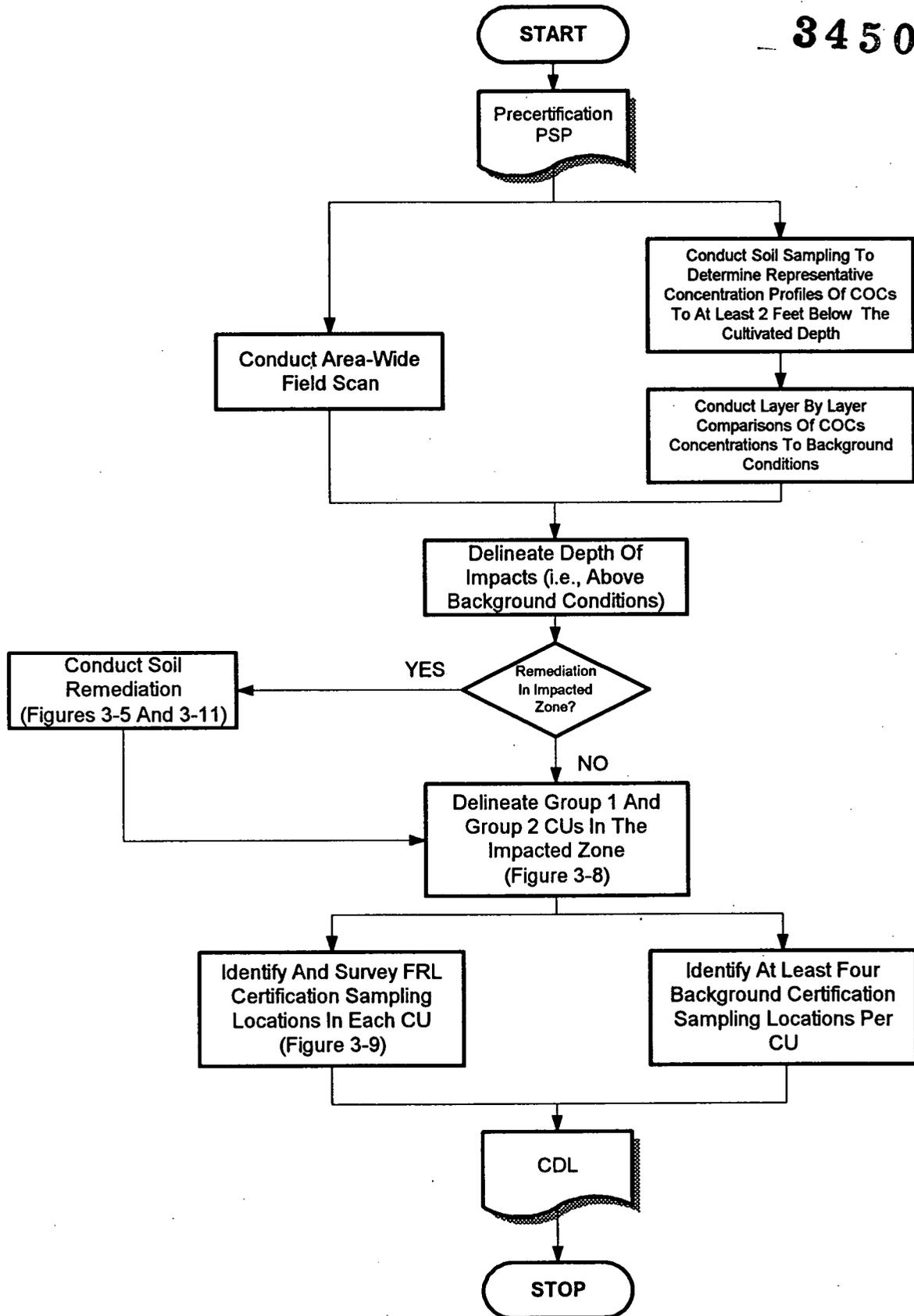


FIGURE 3-15 GENERAL PRECERTIFICATION ACTIVITIES IN CULTIVATED AREA

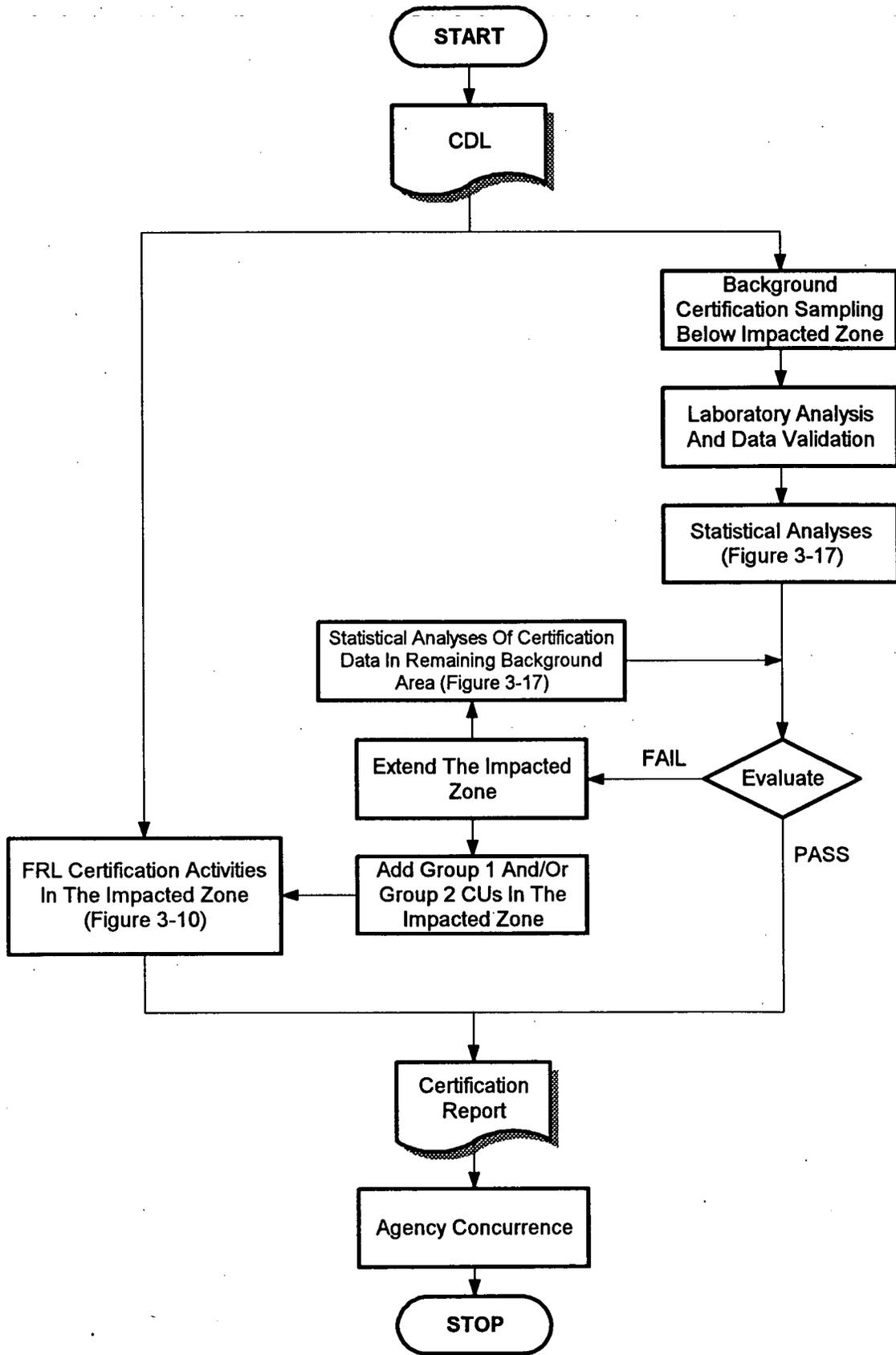


FIGURE 3-16 GENERAL CERTIFICATION PROCEDURE IN CULTIVATED AREA

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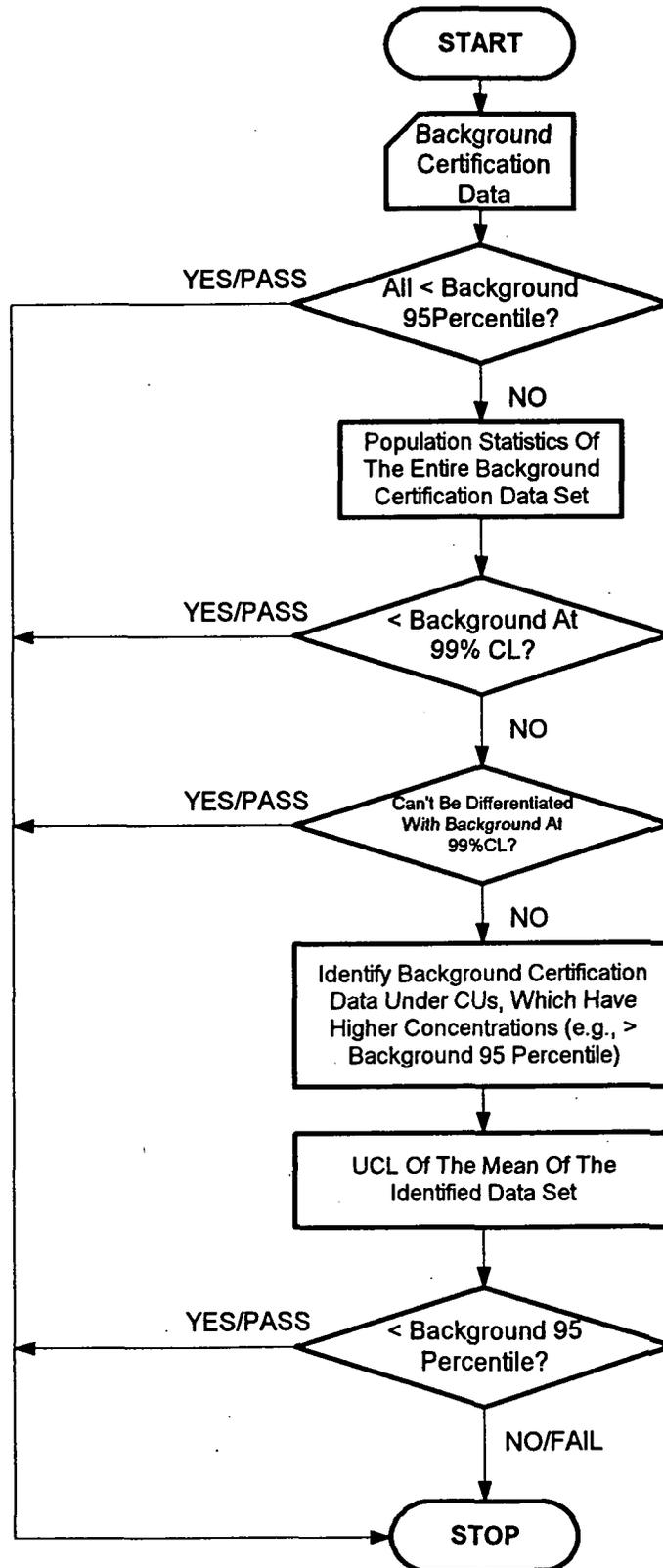


FIGURE 3-17 GENERAL STATISTICAL ANALYSES FOR BACKGROUND CERTIFICATION IN CULTIVATED AREA

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