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Environment & Remediation Support Services

Standard Operating Procedure

for **BACKGROUND VALUE COMPARISONS –
INORGANIC CHEMICALS**

APPROVAL SIGNATURES:

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1.0 PURPOSE AND SCOPE

The purpose of this procedure is to describe the process for performing background value comparisons on inorganic chemicals for the Los Alamos National Laboratory (Laboratory), Environment & Remediation Support Services (ERSS).

2.0 BACKGROUND AND PRECAUTIONS

2.1 Background

The Laboratory's ERSS has received verbal approval from the New Mexico Environmental Division's (NMED's) Hazardous and Radioactive Materials Bureau to use the soil, sediment, and tuff background values from the Laboratory's background data document.

2.2 Precautions

None.

3.0 EQUIPMENT AND TOOLS

None.

4.0 STEP-BY-STEP PROCESS DESCRIPTION

4.1 Prepare for Background Value Comparisons

ERSS Staff Members	1.	Obtain current list of background values from the Laboratory's background data document (i.e., LANL 1998, 59730.2).
	2.	Determine the sample preparation and analytical methods used to generate results from the background samples from the background data sets. [NOTE: Background data sets are available upon request from the ERSS data stewards.]
	3.	Obtain the site (i.e., solid waste management unit, area of concern, consolidated unit being evaluated) data set from the data steward, including at least the following fields of information: <ul style="list-style-type: none"> • sample concentration results; • reporting units of the sample concentrations; • final (RFI) sample result qualifiers; • sample analytical methods; and • sample preparation methods. [NOTE: The site data set may be provided to the user in the same format as it is recorded in the Environmental Restoration Database (ERDB). Data dictionaries and code definitions are available from the ERSS data stewards.]

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ERSS Staff Members (Continued)

4. Determine the comparability of the methods used to prepare and analyze the PRS samples and the background samples.

[NOTE: If site sample methods differ from the Laboratory's background sample methods, consult a chemist.]

4.2 Select Appropriate Background Values

- ERSS Staff Members
1. For site samples collected from soil media, compare to the Laboratory's soil background values.
[NOTE: In this context, "soil media" includes any soil or fill material. Soil is designated as all horizons (ALLH) and fill is designated as FILL.]
 2. For site samples collected from tuff identified as Qbt 2, Qbt 3, and/or Qbt 4, compare to the background values for Qbt 2, Qbt 3, and Qbt 4.
 3. For site samples collected from tuff identified as Qbt 1v, compare to the background values for Qbt 1v.
 4. For site samples collected from tuff identified as Qbt 1g, Qbo, and/or Qct, compare to the background values for Qbt 1g, Qbo, and Qct.
 5. For site sediment samples, compare to the sediment background values.

4.3 Compare PRS Data to Selected Background Values

- ERSS Staff Members
1. If the maximum result for an inorganic chemical from a site is greater than the background value and exceeds the range of concentrations in the background data set for that inorganic chemical, identify the inorganic chemical as a chemical of potential concern.
 2. If the maximum concentration for an inorganic chemical greater than the background value but does not exceed the range of concentrations in the background data set for that inorganic chemical, do not identify the inorganic chemical as a chemical of potential concern.
 3. If the maximum concentration for an inorganic chemical is less than the background value for that inorganic chemical, do not identify the inorganic chemical as a chemical of potential concern.
 4. If the inorganic chemical is detected but has no background value, identify the inorganic chemical as a chemical of potential concern.
 5. Report the frequency of site concentrations for all inorganic chemicals in the data review appendix of the investigation report.

- ERSS Staff Members (Continued)
6. Report both the frequency of concentrations above the background value for detected chemicals and the frequency of detection limits above the background value for non-detected chemicals.
 7. Report the site concentrations of all inorganic chemicals above background (detected and non-detected) for all samples collected in the data review appendix of the investigation report.

[NOTE: After the background value comparison has been completed further statistical tests may be performed to evaluate the difference between site sample concentrations and background sample concentrations.]

4.4 Records

- ERSS Staff Members
1. Submit the following records generated by this procedure to the Records Processing Facility:
 - Investigation report with data review appendix presenting the results of the background value comparisons.

5.0 PROCESS FLOW CHART

Flow chart is to be included at a later date.

6.0 ATTACHMENTS

None.

7.0 REVISION HISTORY

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Revision No. <i>[Enter current revision number, beginning with Rev.0]</i>	Effective Date <i>[DCC inserts effective date for revision]</i>	Description of Changes <i>[List specific changes made since the previous revision]</i>	Type of Change <i>[Technical (T) or Editorial (E)]</i>
0.0	02/09/07	Reformatted and renumbered, supersedes SOP-15.12	E

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