Department of Energy

Ohio Field Office
Fernald Closure Project
175 Tri-County Parkway
Springdale, Ohio 45246

DEC - 4 2006

Mr. James A. Saric, Remedial Project Manager
United States Environmental Protection Agency
Region V-SRF-5J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

DOE-0081-07

Mr. Thomas Schneider, Project Manager
Ohio Environmental Protection Agency
Southwest District Office
401 East Fifth Street
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

TRANSMITTAL OF RESPONSES TO COMMENTS AND THE FINAL CERTIFICATION REPORT FOR AREA 6 WASTE PITS 1, 2, AND 3, THE BURN PIT, THE CLEARWELL, AND THE AREAS WEST AND NORTH OF THE WASTE PITS

References:

1) Letter, T. Schneider to J. Reising, "Comments Draft Certification Report for A6 WP's 1, 2, and 3, the Burn Pit, the Clearwell, and the Areas West and North of the WP's," dated August 18, 2006

2) Letter, J. Saric to J. Reising, "Area 6 Waste Pits Certification Report," dated August 30, 2006

Enclosed for your approval are responses to U.S. Environmental Protection Agency (EPA) and Ohio Environmental Protection Agency (OEPA) comments on the draft Certification Report for Area 6 Waste Pits 1, 2, and 3, the Burn Pit, the Clearwell, and the Areas West and North of the Waste Pits. In reference to the risk evaluation section of this report, the document required an extensive rewrite in order to satisfactorily address both sets of comments. In lieu of creating a lengthy except detailing the risk based approach in the comment responses themselves, the responses have been incorporated into the enclosed final report to provide context and avoid further confusion. If necessary, this final report will be revised again based on any additional comments.

If you have any questions or require additional information, please contact me at (513) 648-3139.

Sincerely,

Johnny Reising

Johnny W. Reising
Director

Enclosures

cc w/enclosures:
J. Desormeau, OH/FCP
T. Schneider, OEPA-Dayton (three copies of enclosures)
G. Jablonowski, USEPA-V, SR-6J
M. Cullerton, Tetra Tech
M. Shupe, HSI GeoTrans
S. Helmer, ODH
AR Coordinator, Fluor Fernald, Inc./MS12

cc w/o enclosures:
J. Chiou, Fluor Fernald, Inc./MS88
F. Johnston, Fluor Fernald, Inc./MS12
C. Murphy, Fluor Fernald, Inc./MS1
T. Terry, Fluor Fernald, Inc./MS1

RESPONSES TO U.S. ENVIRONMENTAL PROTECTION AGENCY AND OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE DRAFT CERTIFICATION REPORT FOR AREA 6 WASTE PITS 1, 2, AND 3, THE BURN PIT, THE CLEARWELL, AND THE AREAS WEST AND NORTH OF THE WASTE PITS

FERNALD CLOSURE PROJECT
FERNALD, OHIO

AUGUST 2006

U.S. DEPARTMENT OF ENERGY

RESPONSES TO REVISED U.S. ENVIRONMENTAL PROTECTION AGENCY TECHNICAL REVIEW COMMENTS ON THE DRAFT CERTIFICATION REPORT FOR AREA 6 WASTE PITS 1, 2, AND 3, THE BURN PIT, THE CLEARWELL, AND THE AREAS WEST AND NORTH OF THE WASTE PITS (20600-RP-0008, Revision A)

GENERAL COMMENTS

Commenting Organization: U.S. EPA Commentor: Saric
Section #: Not Applicable (NA) Page #: NA Line #: NA
Original General Comment #: 1

Comment: The certification report states that certification units (CUs) 10, 11, and 16 failed the statistical criteria for certification required by the Sitewide Excavation Plan. The certification report also states that for CUs 10, 11, and 16, DOE and the regulatory agencies agreed that a risk assessment could be performed on these CUs to demonstrate that the residual contamination values in each CU remain protective of human and the environment. The appropriate sections of the certification report should be revised to provide a reference to the agreement between DOE and the regulatory agencies and also discuss risk levels that were determined to be protective of human health and the environment.

Response: Agree.

Action: Text will be added to the report to reference the DOE and regulatory agencies agreement to perform a risk assessment in lieu of passing certification criteria for radium-226.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Original General Comment #: 2

Comment: The certification report relies on risk assessment results to conclude that residual radium-226 contamination from soil in CUs 10 and 11 from Waste Pit 3 and CU 16 from Waste Pit 2 do not pose significant human health risks. However, the certification report provides insufficient documentation of the risk results and many statements made in the text regarding these results. The text states that calculations were made using equations and exposure scenarios in the Comprehensive Response Action Risk Evaluation (CRARE) and the February 2006 cancer slope factors and reference doses obtained from EPA's Integrated Risk Information System and Oak Ridge's Risk Assessment Information System. The report also briefly summarizes the basis for the exposure point concentrations (EPCs) used in the calculations. In all cases however, the actual exposure equations, exposure parameter values, toxicity factors, and EPCs used in the risk evaluations are not presented. The certification report should be revised to present (at least in summary format) this information. Sufficient information should be presented to allow an independent recalculation of the results.

Also, the certification report only presents summary results -- that is, only pathway-specific total hazard and risk results, along with overall total hazards and risks are presented for each CU. The certification report should be revised to present complete chemical- and pathway-specific results. This information is necessary to document the statements made in the text regarding which chemicals and pathways are driving specific total results.

Response: Agree.

Action: In addition to the summary table presented in the text, the report will be revised to include Appendix C that contains risk calculations for each pathway for the undeveloped park user and a groundskeeper/sampler. The groundskeeper/sampler is the reasonable maximum

exposure receptor for work performed on the site. Every pathway calculation will indicate the exposure parameters, contaminant concentrations, slope factors, reference doses, appropriate equations, and results for each contaminant.

SPECIFIC COMMENTS

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 5.1 Page #: 5-2 Line #: 25
Original Specific Comment #: 1
Comment: The text states that CU A6WP-C1 consists of the footprint of the Clearwell. The text should be revised to state that CU A6WP-C13 consists of the footprint of the Clearwell.

Response: Agree.

Action: The text will be revised to correct this typographical error.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 5.1 Page #: 5-4 Line #: 19
Original Specific Comment #: 2
Comment: The text states that CU A6WP-09 passed all of the certification criteria. The text should be revised to state that CU A6WP-20 passed all of the certification criteria.

Response: Agree.

Action: The text will be revised to correct this typographical error.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 5.2 Page #: 5-5 to 5-7 Line #: NA
Original Specific Comment #: 3
Comment: Section 5.2 should be revised as necessary to provide sufficient documentation of the procedures used to conduct the risk evaluations and the risk results discussed in the text as presented in General Comment #2.

Response: Agree.

Action: See response to General Comment #2.

Commenting Organization: U.S. EPA Commentor: Saric
Appendix #: A.2 Page #: A.2.2 Line #: NA
Original Specific Comment #: 4
Comment: The table is titled Certification Unit A6WP-C12; however, the data provided is for CU A6WP-13. The title of the table should be revised accordingly.

Response: Agree.

Action: The text in this title will be revised to correct this typographical error.

Commenting Organization: U.S. EPA Commentor: Saric
Appendix #: A.2 Page #: A.2.3 Line #: NA
Original Specific Comment #: 5
Comment: The table is titled Certification Unit A6WP-C12; however, the data provided is for CU A6WP-17. The title of the table should be revised accordingly.

Response: Agree.

Action: The text in this title will be revised to correct this typographical error.

Commenting Organization: U.S. EPA Commentor: Saric
Appendix #: A.2 Page #: A.2.4 Line #: NA
Original Specific Comment #: 6
Comment: The table is titled Certification Unit A6WP-C12; however, the data provided is for CU A6WP-19. The title of the table should be revised accordingly.

Response: Agree.

Action: The text in this title will be revised to correct this typographical error.

Commenting Organization: U.S. EPA Commentor: Saric
Appendix #: A.2 Page #: A.2.5 Line #: NA
Original Specific Comment #: 7
Comment: The table is titled Certification Unit A6WP-C12; however, the data provided is for CU A6WP-21. The title of the table should be revised accordingly.

Response: Agree.

Action: The text in this title will be revised to correct this typographical error.

Commenting Organization: U.S. EPA Commentor: Saric
Appendix #: A.3 Page #: A.3-1 Line #: NA
Original Specific Comment #: 7
Comment: Appendix A.3 should be revised to present information regarding the basis for and distinction between Tables A.3.1 and A.3.2. As presented, the reader has an inadequate basis upon which to understand, interpret, and compare the information presented in Tables A.3.1 and A.3.2.

Response: Agree. These tables need elaboration. Therefore, these tables will be replaced with the full calculations and presented as Appendix C.

Action: See action for General Comment #2

RESPONSES TO OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE DRAFT CERTIFICATION REPORT FOR AREA 6 WASTE PITS 1, 2, AND 3, THE BURN PIT, THE CLEARWELL, AND THE AREAS WEST AND NORTH OF THE WASTE PITS (20600-RP-0008, Revision A)

COMMENTS

1. Commenting Organization: Ohio EPA Commenter: OFFO
Section #: General Comment Pg #: Line #: Code: C
Original Comment #: 1
Comment: As we expect this to be the only certification report to address alternate certification methodology, we believe it requires a significantly expanded justification than what is provided in the draft. Further discussion of the extent of excavation, the potential effects of geology within the aquifer, and the planned restoration use of the area should be included. Additionally, it may be appropriate to include a discussion of the ORISE findings for this area.

Response: Agree

Action: The text will be updated to discuss the extent of excavation in the western margin of Pit 3, the association of the radium with a natural clay horizon above the sand and gravel deposirs in the GMA, and the planned restoration use for the area. A summary of ORISE's no significant finding will also be discussed in this report.

2. Commenting Organization: Ohio EPA Commenter: OFFO
Section #: 2.1.3 Pg #: 2-2 Line #: Code: E
Original Comment #: 2
Comment: This section makes reference to a commitment made between the agencies and DOE in regards to DOE's response to Ohio EPA's Comment #4 on the "PSP for Investigating Subsurface Material from Waste Pits 4 through 6, and the Burn Pit." The reference is repeatedly mentioned throughout the document and even though it explains it in Section 2.1.3, that this commitment is related to retaining Area 6 ASCOCs for certification, it becomes less clear in other areas of the document as it is mentioned. Please provide some sort of reference in the document to the meaning behind Comment #4 so that the reader does not lose sight of what the author is trying to convey.

Response: Agree. There were commitments based on DOE's response to comments from OEPA for both the PSP for Investigating Subsurface Material from Waste Pits 4 through 6, and the Burn Pit and the CDL/PSP for Area 6 Waste Pits 1, 2, and 3, the Burn Pit, the Clearwell, and the Areas West and North of the Waste Pits, which causes confusion.

Action: The text will be revised to reference which set of comments the document is referring to.

3. Commenting Organization: Ohio EPA Commenter: OFFO
Section #: 2.2.1 Pg #: 2-2 Line #: 32-34 Code: C
Original Comment #: 3
Comment: The two variances mentioned in this section, 20600-PSP-0016-41 and 44, needed to be included in this Certification Report as part of the document "trail." Please include these two variances in Appendix B.

Response: Agree.

Action: Variances 20600-PSP-0016-41 and 44 will be included in the Final Certification Report as Appendix B.1 and B.2 will include the variances for the CDL/PSP, which were originally presented in Rev A as Appendix B.

4. Commenting Organization: Ohio EPA Commenter: OFFO
Section #: Figure 2-1/2.7 Pg #: Line #: Code: E
Original Comment #: 4
Comment: Certification Unit 27 is not shown on Figure 2-1 however, it is discussed in the document. In addition, the text states that Figure 2-7 illustrates CU 27 but it is not written in the text on the figure or below it in the title.

Response: Agree.

Action: Certification Unit 27 will be included on Figure 2-1 and the title for Figure 2-7 will be changed.

5. Commenting Organization: Ohio EPA Commenter: OFFO
Section #: Figures 2-2 - 2-6 Pg #: Line #: Code: E
Original Comment #: 5
Comment: Figures 2-2 through 2-6 reference "Figure 4-3 thru 6" throughout however, there are no figures in Section 4. Additionally, the figures reference draft on each, which by now they should be final since they are what was implemented. Please correct.

Response: Agree. This was carried over from the CDL/PSP.

Action: Figures 2-2 through 2-6 will be corrected to reference the appropriate figures and 'draft' will be taken off of each of the figures.

6. Commenting Organization: Ohio EPA Commenter: OFFO
Section #: Table 2-1 Pg #: 5-5 Line #: Code: C
Original Comment #: 6
Comment: Specific Comment on Table 2-1 Area 6 ASCOC List Page 2-5: This table should specify what environmental media (soil, groundwater, etc.) these FRL are applicable to.

Response: Agree.

Action: Table 2-1 will specify that these are soil FRLs.

7. Commenting Organization: Ohio EPA Commenter: OFFO
Section #: 5.2 Pg #: 5-5 Line #: Code: C
Original Comment #: 7
Comment: This section should be greatly expanded to provide the reviewer more detail regarding the basic risk assessment assumptions such as exposure unit size. Please define the exposure unit and provide additional discussion to explain the rationale used to define and select the exposure unit.

Response: Agree.

Action: See response to EPA General Comment #2

8. Commenting Organization: Ohio EPA Commenter: OFFO
Section #: 5.2 Pg #: 5-5 Line #: Code: C
Original Comment #: 8
Comment: It's important to discuss the planned reuse of these waste units in order to determine the appropriate exposure unit and grouping of data for risk assessment purposes. Assuming that these areas will be reused as ponds, it is not clear if the reuse of these waste pits are as separate, individual ponds or as one big pond. This needs to be clarified in order to determine how to group the data in order to evaluate the results of certification sampling in a risk assessment exposure scenario.

Response: Agree.

Action: See action for EPA General Comment #2.

9. Commenting Organization: Ohio EPA Commenter: OFFO
Section #: 5.2 Pg #: 5-5 Line #: Code: C
Original Comment #: 9
Comment: In light of the comment above, this is especially confusing since Table A.3.2 *"Summary of Residual Radionuclide Risk for Waste Pit Area"* (Page A.3-1) provides risk estimates for the certification units separately (i.e., CU 10, CU 11, and CU 16) and then also for Waste Pits. It is not clear what data results make up the data set for "Waste Pits" since it appears that CU 10 and CU 11 are within Waste Pit 3 and CU 16 is associated with Waste Pit 2. I assume that they combined all data from CU 10, 11 and 16 to use as the data set in the risk assessment for the "Waste Pits". The question then becomes whether or not this is appropriate based on reuse and exposure. I think that additional discussion in this report to explain the rationale for how they approached the calculations and grouping of data in the risk assessment could be one way to address this comment.

Response: Agree.

Action: See action for EPA General Comment #2.

10. Commenting Organization: Ohio EPA Commenter: OFFO
Section #: 5.2 Pg #: 5-5 Line #: Code: C
Original Comment #: 10
Comment: In order to better understand the results of the risk assessment calculations, please explain if the exposure point concentrations (EPCs) were the maximum detected concentration or a 95% UCL?

Response: Agree.

Action: See action for EPA General Comment #2.

11. Commenting Organization: Ohio EPA Commenter: OFFO
Section #: 5.2 Pg #: 5-5 Line #: Code: C
Original Comment #: 11
Comment: What is missing is a discussion of the results of the risk assessment and any uncertainties regarding the risk assessment. For instance, this risk assessment was based on soil results and a direct soil contact scenario. However, the reuse may be ponds and it is possible that the pond water may provide a level of shielding that is not considered in this risk assessment. If appropriate, this type of information should be discussed in the appropriate section (such as an uncertainty section) and may be helpful to put the results of the risk assessment into perspective.

Response: Agree.

Action: Uncertainties will be discussed in context of exposure parameters, contaminant concentrations and receptors. Also, see action for EPA General Comment #2.

12. Commenting Organization: Ohio EPA Commenter: OFFO
Section #: 5.2 Pg #: 5-5 Line #: Code: C
Original Comment #: 12
Comment: It is my understanding that for CU-10, only one sample location and sample result for radium-226 was greater than two times the FRL, even though the 95% UCL was less than the FRL. The risk assessment results from this area were within acceptable risk range as defined in the NCP. From a risk assessment standpoint, one sample location does not define an exposure unit and it is unlikely that a receptor would be exposed to only that one location; rather a receptor would likely be exposed to an area over time (and that area might consist of several sample results). Therefore, it is important to define the exposure unit for the defined receptor being evaluated and determine if the exposure unit is appropriate for that receptor. It is also important to include a discussion and uncertainty section after the risk assessment in order to present important points such as this and be able to put the risk assessment results into perspective.

Response: Agree.

Action: See action for Comment 11

13. Commenting Organization: Ohio EPA Commenter: OFFO
Section #: Table A.3.1 & A.3.2 Pg #: Line #: Code: C
Original Comment #: 13
Comment: Specific Comment on Table A.3.1 and Table A.3.2 - it is not clear what the difference is between these two tables. Does one table present the risks for chemicals and radionuclides combined and the other table just present the risk estimates for radionuclides only? Please clarify this in the table headings/titles or as a footnote.

Response: Agree. These tables need elaboration. Therefore, these tables will be replaced with the full calculations and presented as Appendix C.

Action: Discuss content and conclusions for tables presented in the appendix. Also, see action for EPA General Comment #2.

3.0 OVERVIEW OF FIELD ACTIVITIES

In accordance with the SEP, prior to conducting precertification and certification activities, soil demonstrated to contain contamination above the associated FRLs or other applicable action levels was evaluated for remedial actions. All historical soil data within the boundary of the Sitewide Rail Line System certification area was pulled from the Sitewide Environmental Database (SED). Based on the results of sampling and scanning activities summarized below, it was determined that no remedial actions were necessary to remove above-FRL or above-WAC soil.

3.1 AREA PREPARATION AND PRECERTIFICATION

All historical data are discussed in the Post-Excavation As-Built Report for Area 7, Phase I (DOE 2004), the Excavation Plan for Area 6 Waste Pits and General Area (DOE 2005a), the Excavation Plan for Area 7 Silos and General Area (DOE 2005b), and the Excavation Plan for Area 7 Support and Silos Process Area (DOE 2005c). These include soil data collected during the RI/FS and various predesign investigations. There are no records or data to indicate that the ballast was sampled prior to this effort.

As discussed in the Area 6 Subarea 1 Predesign Project Specific Plan (DOE 2005d), a field survey investigation of the historical topography of the railyard versus the current soil elevation was completed to determine cut and fill areas that post date site production activities. Based on the field survey investigation, the eastern half of the railyard was cut to a maximum depth of four feet below the historic surface, and the western half of the railyard was filled with up to three feet of soil.

During the construction of the railyard, a surface scrape was performed over much of the eastern area to remove surface contamination, and the area was not available for investigation. Samples collected from the western half did not reproduce the historical above-FRL conditions, because of the fill depth. The source of the soil used for fill is unknown, but samples demonstrate no above-FRL condition. Historic operations did not ship waste off site, so the soil beneath the railyard (outside of the former production area) is considered to be below-FRL. As a conservative measure, however, in the Excavation Plan for Area 6 Waste Pits and General Area, the DOE committed to use a stratified certification effort, with the fill soil being a unique CU and the native soil beneath the fill being a unique CU. This stratified certification is discussed further in Section 5.0.

Additional predesign borings were placed along the remaining rail line within the former production area to investigate historical above-FRL contamination, but the borings did not confirm the historical conditions. New predesign borings were also placed to fill data gaps along the trace of the rail lines. All samples exhibited below-FRL conditions, so there were no designed above-WAC or above-FRL area excavations planned for the Sitewide Rail Line System.

Real-time precertification scans were completed on the soil, the old ballast, and new ballast to evaluate residual radiological contamination within the Sitewide Rail Line System. Scanning of the ballast is based upon discussions with OEPA at a TIE Meeting held on July 28, 2006. The scanning results are provided in Appendix A and Appendix B of the CDL for Area 6 Sitewide Rail Line System.

3.2 CHANGES TO SCOPE OF WORK

There were no changes to the scope of work for the Sitewide Rail Line System.

4.0 ANALYTICAL METHODOLOGIES, DATA VALIDATION PROCESSES, AND DATA REDUCTION

4.1 ANALYTICAL METHODOLOGIES

All collected samples were sent to off-site laboratories for analysis, and the labs complied with the Sitewide Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Quality Assurance Project Plant (SCQ) requirements (DOE 2003). The SCQ is the source for analytical methodologies (Appendix G), data verification and validation, and analytical quality assurance/quality control requirements.

Laboratory analysis of precertification samples was conducted using approved analytical methods, as discussed in Appendix H of the SEP. The minimum detection level (MDL) was set at 10 percent of the FRL, and soil analyses were conducted to Analytical Support Level (ASL) D or E; where E is used if the MDL of 10 percent of the FRL is above the SCQ ASL detection level, but the analyses meet all other SCQ ASL D criteria. ASL D data packages were provided for all of the soil analytical data. All data were validated and entered into the FCP SED. Final certification results are provided in Appendix A for the soil samples and Appendix B for the ballast. A summary of the analytical methods follows.

4.1.1 Chemical Methods

Metals

Samples submitted for metals analysis, with the exception of mercury, were analyzed by inductively coupled plasma-mass spectrometry.

Samples submitted for mercury analysis were analyzed by cold vapor atomic absorption.

Volatile Organic Compounds (VOCs)

Samples submitted for VOC analyses were analyzed by gas chromatography/mass spectrometry.

Semi-Volatile Organic Compounds (SVOCs)

Samples submitted for SVOC analysis were analyzed by gas chromatography/mass spectrometry.

Pesticides/Polychlorinated Biphenyls (Pest/PCBs)

Samples submitted for pesticide or PCB analysis were analyzed bye gas chromatography.

4.1.2 Radiochemical Methods

The radiochemical analytical methods used performance-based specification criteria, including highest allowable minimum detectable concentration (HAMDC), matrix spike, ASCOC concentrations in method blank, percent recovery of tracer, matrix spike and laboratory control sample, and percent recovery for

duplicate samples were specified for each analyte. Laboratories were required to meet these specifications for the following radionuclides:

Uranium-238

Samples are analyzed for uranium-238 progeny using multiple gamma rays, and the error-weighted average of the emission lines is used to report uranium-238 activity. The uranium-238 activity is used to calculate the total uranium value as follows:

$$\text{Total Uranium (mg/kg)} = 2.998544 \text{ (mg/pCi * g/kg) x Uranium-238 (pCi/g)}$$

The validation qualifier assigned to the total uranium value is the same as the uranium-238 qualifier.

Radium-226

Following a 7-day in-growth for radon-222 (Appendix D), radium-226 progeny are measured using multiple gamma rays, and the error-weighted average of the emission lines is used to report radium-226 activity.

Radium-228 and Thorium-232

Samples are analyzed for radium-228 and thorium-232 progeny using multiple gamma rays, and the error-weighted average of the emission lines is used to report radium-228 and thorium-232 activities. The identical activity is reported for radium-228 and thorium-232, as they are assumed to be in secular equilibrium with the measured daughter.

Thorium-228

Thorium-228 is quantified by direct measurement of its gamma emission lines, and the error-weighted average of the emission lines is used to report the activity.

Cesium-137

Cesium-137 is quantified by direct measurement of its gamma emission lines, and the error-weighted average of the emission lines is used to report the activity.

Technetium-99

Following a chemical separation, technetium-99 is quantified using a liquid Scintillation counter.

Thorium-230

Thorium-230 is quantified by measuring its characteristic alpha emission energies and correcting the activity based on the yield of a thorium-229 tracer.

Lead-210

Lead-210 progeny are measured using multiple gamma rays, and the error-weighted average of the emission lines is used to report lead-210 activity.

4.2 DATA VERIFICATION AND VALIDATION

Data verification and validation (V&V) processes are used to examine the quality of field sampling and handling procedures, laboratory analysis and reporting, and non-conformance and discrepancy resolution. Analytical data are qualified to the appropriate data decision level by assessing the precision, accuracy, completeness, comparability, and representativeness of the measurements. The U.S. Environmental Protection Agency (EPA) National Functional Guidelines for Data Review (Inorganic Data) (EPA 1994), as adapted and approved by EPA Region V, as well as the Section 11.2 and Appendix D of the SCQ, are the appropriate V&V reference documents.

The V&V process evaluated the following parameters:

- Specific field forms for sample collection and handling
- Chain of Custody Forms
- Completeness of laboratory data package
- Holding times
- Instrument calibrations
- Calculation of results
- Laboratory/field duplicate precision
- Field/Laboratory Blank contamination
- Dry weight correction for solid samples
- Correct detection limits reported
- Recovery of laboratory control samples and compliance with established limits.

Parameters unique to the evaluation of radiochemical analyses include:

- Calibration data for specific gamma and alpha energies
- Background checks
- Relative error ratios
- Detector efficiencies
- Background count correction.

For this project, all sample data were reviewed and validated for the criteria noted above. Per project requirements specified in the SEP and Data Quality Objectives SL-052, a minimum 10 percent of the certification data were validated to Validation Support Level (VSL) D, and the remaining data were validated to VSL B. VSL D is a rigorous data review that includes the review process for VSL B plus a systematic review of the raw data and recalculation of all results.

Following V&V, qualifier codes are applied to the results to reflect the level of confidence assigned to a particular datum. These codes can include the following:

- No qualification; the positive result or detection limit is confident as reported

J Positive result is estimated or imprecise; data point is usable for decision-making purposes. Positive results less than the contract required reporting limit are also qualified in this manner

R Positive result or detection limit is considered unreliable; data point should not be used for decision-making purposes

U Undetected result at the stated limit of detection

UJ Undetected result; detection limit is considered estimated or imprecise; the data point is usable for decision-making purposes

N Positive result is tentatively identified - that is, there is some question regarding the actual identification and quantification of the result. Compound reported is best professional judgment of the interpretation of the supporting data, such as mass spectra. Caution must be exercised with the use of this data

NJ Positive result is tentatively estimated; detection limit is considered estimated or imprecise

NV Not validated. The results for this sample were not validated

Z This result, or detection limit in this analysis is not the best one to use; another analysis (e.g., the dilution or re-analysis) contains a more confident and usable result.

The V&V of the data set in this certification report did not identify any analytical problems. All the results are qualified as acceptable (-), estimated (J) and/or non-detects (U). No results were rejected.

4.3 DATA REDUCTION

Each sample used to support the certification decision was entered in the FCP SED with the following information:

Field Information

- Sample Identification Number - A unique number assigned to each discrete sample point
- Coordinate Information - Northing and Easting locations
- Certification Unit - Each sample is assigned to a CU.

Laboratory Information

For each sample result the following information is entered:

- Laboratory Result - The laboratory reported analytical value.

- Laboratory Qualifier - The qualifier reported from the lab. (Note: radiological non-detect values are assigned a U qualifier by Fluor, because the lab does not).

- Total Propagated Uncertainty (TPU) - This value represents the uncertainty associated with the reported radiological result. TPU includes the counting error, as well as uncertainty from other laboratory measurements and data reduction.

- Units - The units for the reported laboratory result.

Validation Information

- Validation Result - The result based on the validation process. During the validation process, sample results may be adjusted. If the laboratory result is less than the requested minimum detectable concentration (MDC), the validation result becomes the MDC.

- Validation TPU - The TPU based on the validation process.

- Validation Qualifier - The qualifier assigned as a result of the data validation process.

- Validation Units - The units reported by the laboratory, unless corrected by the validation process.

Using the information above, the following actions are taken for data reduction of each CU data set.

1. All the data for each CU are queried from SED.
2. The data from the validation fields are used in the statistical calculations
3. Data with a qualifier of R or Z are not used in the statistical calculations
4. The higher of the two duplicate results is used in the statistical calculations
5. One half of the non-detect (U or UJ) value is used in the statistical calculations.

5.0 CERTIFICATION EVALUATION AND CONCLUSIONS

Certification success or failure was based on sample data from each CU against criteria discussed in Section 2.2.4. Subsequent to any evaluation of preliminary data, full statistical analysis and evaluation was performed on all validated data. Final certification data are presented in Appendix B.

5.1 CERTIFICATION RESULTS AND EVALUATION

The following is a summary of the analytical results and statistical analyses of the data for each CU in the Sitewide Rail Line System:

RLS-C01

CU RLS-C01 had one sample location above-FRL for arsenic, and it passed statistical analysis as discussed in Section 2.3. Final certification data for the CU are presented in Appendix A.

RLS-C02

CU RLS-C02 had one sample location above-FRL for radium-226, and it passed statistical analysis as discussed in Section 2.3. Final certification data for the CU are presented in Appendix A.

RLS-C03

CU RLS-C03 had one sample location above-FRL for arsenic, and it passed statistical analysis as discussed in Section 2.3. Final certification data for the CU are presented in Appendix A.

RLS-C04

CU RLS-C04 had one sample location above-FRL for arsenic, and it passed statistical analysis as discussed in Section 2.3. Final certification data for the CU are presented in Appendix A.

RLS-C05

CU RLS-C06 passed all of the certification criteria as discussed in Section 2.3. Final certification data are presented in Appendix A.

RLS-C06

CU RLS-C06 passed all of the certification criteria as discussed in Section 2.3. Final certification data are presented in Appendix A.

RLS-C07

CU RLS-C07 passed all of the certification criteria as discussed in Section 2.3. Final certification data are presented in Appendix A.

RLS-C08

CU RLS-C08 had one sample result above-FRL for thorium-232, and it passed statistical analysis as discussed in Section 2.3. Final certification data for the CU are presented in Appendix A.

RLS-C09

Within CU RLS-09, one sample location was above-FRL for beryllium. Beryllium, as well as all other ASCOCs, passed all of the certification criteria as discussed in Section 2.3. Final certification data are presented in Appendix A.

RLS-C10

CU RLS-C10 had one sample location above-FRL for arsenic, and it passed statistical analysis as discussed in Section 2.3. Final certification data for the CU are presented in Appendix A.

RLS-C11

CU RLS-C11 had one sample location above-FRL for arsenic, and it passed statistical analysis as discussed in Section 2.3. Final certification data for the CU are presented in Appendix A.

RLS-C12

CU RLS-C12 passed all of the certification criteria as discussed in Section 2.3. Final certification data are presented in Appendix A.

RLS-C13

CU RLS-C13 passed all of the certification criteria as discussed in Section 2.3. Final certification data are presented in Appendix A.

RLS-C14

CU RLS-C14 passed all of the certification criteria as discussed in Section 2.3. Final certification data are presented in Appendix A.

RLS-C15

Within CU RLS-C15, there were above-FRL sample locations for radium-226, thorium-228, and thorium-232, but each passed statistical analysis as discussed in Section 2.3. Final certification data are presented in Appendix A.

RLS-C16

CU RLS-C16 passed all of the certification criteria as discussed in Section 2.3. Final certification data are presented in Appendix A.

Stratified Fill CU

The stratified fill CU passed all of the certification criteria as discussed in Section 2.3. Final certification data are presented in Appendix A.

Soil Under Rail Trestle

For the soil under the rail trestle, all primary and secondary ASCOCs passed the certification criteria as discussed in Section 2.3. However, several ecological PAHs (benzo(a)pyrene, benzo(g,h,i)perlene, fluoranthene, phenantherene, and pyrene) had some results exceeding the established BTVs. Because of the nature of the screening process, BTV exceedances do not necessarily indicate that impact to ecological receptors will occur. Pursuant to the SEP, BTVs are used to determine the need for further evaluation and as stated in Section C.1.3.3 of the SEP, certification will not depend on characterization of constituents of ecological concern. Given that all samples for this CU were collected on the banks of Paddys Run Creek under the rail trestle, comparison to results in the Paddys Run Corridor were deemed appropriate. After reviewing all results for the surrounding area, the BTV exceedances appear to be isolated to the area directly under the trestle since samples collected directly to the north and south of the trestle show no significant levels of PAH contamination. Further, samples collected downstream along Paddys Run Corridor shows no indication that the PAHs are migrating in concentrations significant enough to impact additional areas. After evaluating the level and extent of the BTV exceedances according to Section 2.1.4 of the SEP, it was determined that no further remediation is warranted. Final certification data are presented in Appendix A.

Ballast West of Paddys Run

All ASCOCs in this CU passed the certification criteria discussed in Section 2.3. Final certification data are presented in Appendix B.

Ballast East of Paddys Run

With the exception of arsenic, all ASCOCs in this CU passed the certification criteria discussed in Section 2.3. The statistical analysis of the secondary COC arsenic from the ballast in this area showed indications of elevated conditions with the 90% UCL on the mean being 15.2 mg/kg as compared to the FRL of 12 mg/kg. Since the material being certified is ballast rather than soil, an investigation of the source material was conducted. The ballast in the rail yard was considered to be clean source material as it was

constructed in the recent past and was therefore sampled for arsenic to establish background conditions. The maximum value for arsenic in the rail yard ballast was 16 mg/kg with a mean of 9.88 mg/kg (See Appendix B). Conversely, the maximum value for arsenic in the ballast east of Paddys Run was 15.2 mg/kg with a mean of 9.26 mg/kg, both of which are less then the rail yard values. However, there is a large standard deviation for the samples from the ballast east of Paddys Run with values ranging from 1.8 to 15.2 mg/kg of arsenic, which is one of the contributing factors that causes the 90% UCL on the mean for this dataset to be greater than the FRL. Although the 1.8 mg/kg value is not a statistical outlier, it is clearly background. As such, by analyzing the higher values of this dataset, if considered to be attributed to contamination, without the 1.8 mg/kg value, the 90% UCL on the mean is 11.6 mg/kg with a mean of 9.28 mg/kg, which is lower than the soil FRL that was developed based on background levels in soil. Although inconclusive due to the limited number of samples, it indicates that this area should not be of significant concern.

Subsequent evaluation of the characteristics of the ballast from east of Paddys Run shows that no other primary constituent of concern such as uranium, radium, or thorium, which would be indicative of contamination, was found to be elevated in this ballast. This supports the conclusion that the arsenic levels in the ballast east of Paddys Run are consistent with background conditions and are not related to site operations. Therefore, the ballast does not warrant further remediation. Final certification data are presented in Appendix B.

5.2 FORMER SITEWIDE RAIL LINE SYSTEM CERTIFICATION CONCLUSIONS

Based on the certification analytical results, precertification data, and statistical analysis, DOE has determined that the remedial objectives in the OU5 ROD have been achieved for the former SWRB Area, and no further remedial actions are required. This portion of the FCP will be released for restoration and final land use upon EPA and OEPA concurrence.

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APPENDIX A

SOIL PRECERTIFICATION SAMPLES, ANALYTICAL RESULTS AND FINAL STATISTICS TABLES

APPENDIX A
STATISTICAL ABBREVIATIONS AND SYMBOLS

The procedure used to determine if the data are to be assumed to be either normally distributed or lognormally distributed is outlined in Section G.2.3 of Appendix G to the SEP. The second paragraph under "Step 3: Perform the Shapiro-Wilk Test to evaluate if the data are normally or lognormally distributed" states that "If the Shapiro-Wilk Test indicates both normal and lognormal distributions fit the data, the distribution with the highest p-value will be used in the Student's t-Test (Section G.2.2.2) to make the certification decision." Therefore, the distribution testing procedure is not a matter of transforming the data and then testing for lognormality only when the normality assumption fails as the comment seems to imply. The method is to test both normality and lognormality and select the distribution that "best" fits the data as defined by the test yielding the higher p-value above a minimum acceptable value. The minimum acceptable p-value for acceptance of a distribution was set at 0.05.

If the maximum result for each analyte is below the FRL, no statistical result needs to be reported. For all statistical evaluations, the maximum value of the two duplicates was used.

Abbreviations:

Est. Mean* - Estimated measure of central tendency (Normal: Mean; LogNormal: Est Mean; Non-Parametric: Median)

W-Statistic Probability - Shapiro-Wilk probability of the "better" fit - either normal or lognormal (note: a value less than 0.05 indicates that neither normality nor lognormality could be accepted, but the highest p-value is still shown). The test is performed on the raw untransformed data (N) and the log-transformed data (LN) to test for lognormality.

t-Test (N) - indicates that the normal distribution is best fit to data with a p-value greater than or equal to 0.05.

t-Test (LN) - indicates that the lognormal distribution is best fit to data with a p-value greater than or equal to 0.05.

Sign Test - the Sign test was used because one of the following situations occurred:

1. there were greater than 50 percent non-detects,
2. between 15 and 50 percent non-detects and data not symmetrically distributed,
3. less than 15 percent non-detects, but fails Shapiro-Wilk test for both normality and lognormality and data not symmetrically distributed.

Wilcoxon SR - the Wilcoxon Signed Rank procedure was used because of one of the following situations:

1. between 15 and 50 percent non-detects and data symmetrically distributed,
2. less than 15 percent non-detects, but fails Shapiro-Wilk test for both normality and lognormality and data symmetrically distributed.

Note: Data was considered to be "symmetrically distributed" if the Standardized Skewness had an Absolute Value of less than or equal to 2.00 (i.e., between -2.00 and 2.00).

Number of NDs - number of non-detects.

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C01

SAMPLE ID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Arsenic	Beryllium	Aroclor-1254	Aroclor-1260
RLS-C01-1	1.07 -	0.941 -	0.975 -	0.941 -	4.76 J	7.34 J	0.683 -	4.5 J	3.9 U
RLS-C01-2	0.981 -	0.759 -	0.752 -	0.759 -	3.66 U	5.1 J	0.425 -	3.8 U	3.8 U
RLS-C01-3	1.6 -	1.24 -	1.3 -	1.24 -	7.89 -	10.8 J	0.571 -	4.5 U	4.5 U
RLS-C01-5	1.11 -	0.84 -	0.883 -	0.84 -	2.89 U	5.89 J	0.517 -	3.9 U	3.9 U
RLS-C01-7	0.935 -	0.769 -	0.733 -	0.769 -	3.28 U	4.93 J	0.468 -	3.8 U	3.8 U
RLS-C01-8	1.68 -	1.27 -	1.27 -	1.27 -	3.96 U	8.96 J	0.809 -	4.1 U	4.1 U
RLS-C01-8-D	1.53 -	1.29 -	1.39 -	1.29 -	10.7 -	12.1 J	0.942 -	4.1 U	4.1 U
RLS-C01-10	0.605 -	0.416 -	0.413 -	0.416 -	2.39 U	7.24 J	0.464 -	3.8 U	3.8 U
RLS-C01-11	0.987 -	0.961 -	1 -	0.961 -	4.05 U	4.61 J	0.472 -	3.9 U	3.9 U
RLS-C01-12	0.978 -	0.735 -	0.755 -	0.735 -	5.53 U	5.51 J	0.445 -	3.7 U	3.7 U
RLS-C01-13	0.997 -	0.741 -	0.753 -	0.741 -	6.05 J	5.32 J	0.596 -	3.9 U	3.9 U
RLS-C01-15	1.05 -	0.691 -	0.627 -	0.691 -	5.9 J	4.53 J	0.364 -	3.8 U	3.8 U
RLS-C01-16	1.06 -	0.683 -	0.684 -	0.683 -	4.7 J	7 J	0.49 -	3.6 U	3.6 U
Limit	1.7	1.8	1.7	1.5	82	12.0	1.5	130	130
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	mg/kg	mg/kg	ug/kg	ug/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%	90%
Max. Result	1.68	1.29	1.39	1.29	10.7	12.1	0 .942	4.5	4.5 U
Max. >= Limit	No	No	No	No	No	Yes	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -	9.2% (LN)	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -	Lognormal	- -	- -	- -
Sample Size	12	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	6	0	0	11	12
% Nondetects	0%	0%	0%	0%	50%	0%	0%	92%	100%
Est. Mean*	- -	- -	- -	- -	- -	6.699	- -	- -	- -
UCL	- -	- -	- -	- -	- -	7.703	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	pass	- -	- -	- -

a posteriori Sample	- -	- -	- -	- -	- -	2	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -	Pass	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C02

SAMPLE ID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Arsenic	Beryllium	Aroclor-1254	Aroclor-1260
RLS-C02-1	1.06 -	1 -	1.01 -	1 -	5.35 -	6.6 J	0.62 -	3.9 U	3.9 U
RLS-C02-2	1.16 -	0.992 -	1.33 -	0.992 -	4.27 -	6.7 J	0.64 -	3.8 U	3.8 U
RLS-C02-4	1.82 -	1.41 -	1.4 -	1.41 -	6.09 -	9.3 J	1.2 -	4.1 U	4.1 U
RLS-C02-5	0.946 -	1.11 -	1.12 -	1.11 -	2.26 U	7.2 J	0.79 -	3.9 U	3.9 U
RLS-C02-5-D	0.915 -	1.06 -	1.06 -	1.06 -	5.09 -	9.5 J	0.8 -	4 U	4 U
RLS-C02-6	1.23 J	1.25 J	1.28 J	1.25 J	6.57 -	8.4 -	0.77 J	4.1 U	4.1 U
RLS-C02-8	1.2 -	1.46 -	1.47 -	1.46 -	5.99 -	8 J	0.92 -	4.2 U	4.2 U
RLS-C02-9	1.49 -	1.32 -	1.35 -	1.32 -	5.34 -	9.1 J	0.79 -	4 U	4 U
RLS-C02-10	1.37 J	1.34 J	1.39 J	1.34 J	5.15 -	8.8 -	0.89 J	4.1 U	4.1 U
RLS-C02-12	0.745 -	0.673 -	0.695 -	0.673 -	3.65 -	4.9 J	0.58 -	3.7 U	3.7 U
RLS-C02-13	0.791 J	0.623 J	0.632 J	0.623 J	2.16 J	4.8 -	0.37 J	3.7 U	3.7 U
RLS-C02-14	0.872 J	0.729 J	0.733 J	0.729 J	3.66 J	4.9 -	0.45 J	3.8 U	3.8 U
RLS-C02-15	0.806 -	0.734 -	0.742 -	0.734 -	3.44 -	5.2 J	0.49 -	3.7 U	3.7 U
Limit	1.7	1.8	1.7	1.5	82	12	1.5	130	130
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	mg/kg	mg/kg	ug/kg	ug/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%	90%
Max. Result	1.82	1.46	1.47	1.46	6.57	9.5	1.2	4.2 U	4.2 U
Max. > Limit	Yes	No	No	No	No	No	No	No	No
W-statistic Prob. #	73.2% (LN)	- -	- -	- -	- -	- -	- -	- -	- -
Test Procedure	Lognormal	- -	- -	- -	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	0	0	0	12	12
% Nondetects	0%	0%	0%	0%	0%	0%	0%	100%	100%
Est. Mean*	1.127	- -	- -	- -	- -	- -	- -	- -	- -
UCL	1.322	- -	- -	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	pass	- -	- -	- -	- -	- -	- -	- -	- -

a posteriori Sample	4	- -	- -	- -	- -	- -	- -	- -	- -
Size calculation	Pass	- -	- -	- -	- -	- -	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C03

SAMPLE ID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Arsenic	Beryllium	Aroclor-1254	Aroclor-1260
RLS-C03-1	1.11 J	1 J	1.03 J	1 J	5.09 -	7 J	0.89 -	3.9 U	3.9 U
RLS-C03-2	0.933 J	0.974 J	0.966 J	0.974 J	8.21 -	4.8 J	0.6 -	4 U	4 U
RLS-C03-3	1.11 J	1.23 J	1.25 J	1.23 J	3.37 U	7.2 J	0.91 -	4 U	4 U
RLS-C03-5	1.12 J	1.27 J	1.3 J	1.27 J	6.64 -	6.1 J	0.74 -	3.9 U	3.9 U
RLS-C03-6	1.66 J	1.29 J	1.29 J	1.29 J	2.7 U	13.1 J	1.1 -	4.2 U	4.2 U
RLS-C03-6-D	1.38 J	1.07 J	1.01 J	1.07 J	5.19 -	7.9 J	0.96 -	4.1 U	4.1 U
RLS-C03-7	1.32 J	1.1 J	1.09 J	1.1 J	6.4 -	7.2 J	1.1 -	4.3 U	4.3 U
RLS-C03-9	1.43 J	1.24 J	1.23 J	1.24 J	3.87 J	7.3 J	1.1 -	4 U	4 U
RLS-C03-10	0.736 J	0.699 J	0.704 J	0.699 J	3.91 J	4.3 J	0.64 -	3.8 U	3.8 U
RLS-C03-11	0.771 J	0.715 J	0.759 J	0.715 J	3.86 J	4.8 J	0.61 -	3.7 U	3.7 U
RLS-C03-13	0.837 J	0.765 J	0.762 J	0.765 J	3.28 J	3.9 J	0.6 -	3.8 U	3.8 U
RLS-C03-14	0.693 J	0.62 J	0.64 J	0.62 J	4.65 J	7.8 J	0.44 -	3.8 U	3.8 U
RLS-C03-16	0.853 J	0.722 J	0.721 J	0.722 J	3.27 U	3.4 J	0.77 -	3.8 U	3.8 U
Limit	1.7	1.8	1.7	1.5	82	12	1.5	130	130
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	mg/kg	mg/kg	ug/kg	ug/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%	90%
Max. Result	1.66	1.29	1.3	1.29	8.21	13.1	1.1	4.3 U	4.3 U
Max. >= Limit	No	No	No	No	No	Yes	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -	49.3% (LN)	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -	Lognormal	- -	- -	- -
Sample Size	12	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	2	0	0	12	12
% Nondetects	0%	0%	0%	0%	17%	0%	0%	100%	100%
Est. Mean*	- -	- -	- -	- -	- -	6.429	- -	- -	- -
UCL	- -	- -	- -	- -	- -	7.589	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	pass	- -	- -	- -

a posteriori Sample	- -	- -	- -	- -	- -	3	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -	Pass	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C04

SAMPLE ID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Technetium-99	Thorium-230	Arsenic	Beryllium
RLS-C04-1	0.81 J	0.926 J	0.937 J	0.926 J	9.62 -	2.08 U	1.08 J	9.8 -	0.72 -
RLS-C04-3	0.96 -	1.06 -	1.05 -	1.06 -	5.51 J	2.19 U	1.16 J	5.5 -	0.58 J
RLS-C04-4	0.946 -	0.873 -	0.858 -	0.873 -	5.33 J	2.02 U	1.31 J	6.3 -	0.65 J
RLS-C04-5	0.827 J	1.06 J	1.06 J	1.06 J	5.37 -	1.97 U	0.824 J	5.1 -	0.34 -
RLS-C04-7	1.34 -	1.12 -	1.1 -	1.12 -	4.94 J	1.95 U	1.13 J	10.5 -	0.76 J
RLS-C04-8	1 -	1.1 J	1.13 J	1.1 J	4.1 -	1.88 U	1.48 -	13 J	0.73 -
RLS-C04-9	1.29 J	1.13 J	1.18 J	1.13 J	7.49 -	1.56 U	2.1 J	7.7 -	1.1 J
RLS-C04-9-D	0.976 J	1.05 J	1.08 J	1.05 J	5.8 -	1.51 U	1.01 -	8.6 -	0.71 J
RLS-C04-11	0.821 -	0.831 -	0.807 -	0.831 -	4.68 -	1.65 U	1.8 J	6.3 J	0.68 -
RLS-C04-12	1.12 J	1.02 J	1.03 J	1.02 J	4.7 -	1.47 U	1.17 -	7 -	0.65 J
RLS-C04-14	0.834	0.799 -	0.777 -	0.799 -	2.91 U	1.62 U	1.93 J	7.2 J	0.65 -
RLS-C04-15	0.895 -	0.89 J	0.889 J	0.89 J	3.43 -	1.67 U	1.03 -	5.4 -	0.6 -
RLS-C04-16	0.903 -	0.903 J	0.91 J	0.903 J	2.45 U	1.55 U	0.876 -	5 -	0.66 -
Limit	1.7	1.8	1.7	1.5	82	30	280	12	1.5
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	pCi/g	mg/kg	mg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%	90%
Max. Result	1.34	1.13	1.18	1.13	9.62	2.19 U	2.1	13	1.1
Max. > Limit	No	No	No	No	No	No	No	Yes	No
W-statistic Prob. #	- -	- -	- -	- -	- -	- -	- -	36.7% (LN)	- -
Test Procedure	- -	- -	- -	- -	- -	- -	- -	Lognormal	- -
Sample Size	12	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	2	12	0	0	0
% Nondetects	0%	0%	0%	0%	17%	100%	0%	0%	0%
Est. Mean*	- -	- -	- -	- -	- -	- -	- -	7.488	- -
UCL	- -	- -	- -	- -	- -	- -	- -	8.568	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	- -	- -	Pass	- -

a posteriori Sample	- -	- -	- -	- -	- -	- -	- -	3	- -
Size calculation	- -	- -	- -	- -	- -	- -	- -	Pass	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C04

SAMPLE ID	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene
RLS-C04-1	49.5 U	62.8 J	49.5 U	169 -	49.5 U	49.5 U	49.5 U
RLS-C04-3	38.6 U	38.6 U	38.6 U	38.6 U	38.6 U	38.6 U	38.6 U
RLS-C04-4	37.6 U	37.6 U	37.6 U	37.6 U	37.6 U	37.6 U	37.6 U
RLS-C04-5	43.2 U	43.2 U	43.2 U	43.2 U	43.2 U	43.2 U	43.2 U
RLS-C04-7	39.7 U	39.7 U	39.7 U	39.7 U	39.7 U	39.7 U	39.7 U
RLS-C04-8	39.1 U	39.1 U	39.1 U	39.1 U	39.1 U	39.1 U	39.1 U
RLS-C04-9	39 U	39 U	39 U	39 U	39 U	39 U	39 U
RLS-C04-9-D	38.9 U	38.9 U	38.9 U	38.9 U	38.9 U	38.9 U	38.9 U
RLS-C04-11	37.9 U	37.9 U	37.9 U	37.9 U	37.9 U	37.9 U	37.9 U
RLS-C04-12	39 U	39 U	39 U	39 U	39 U	39 U	39 U
RLS-C04-14	38 U	38 U	38 U	38 U	38 U	38 U	38 U
RLS-C04-15	39.1 U	39.1 U	39.1 U	39.1 U	39.1 U	39.1 U	39.1 U
RLS-C04-16	38 U	38 U	38 U	38 U	38 U	38 U	38 U
Limit	20000	2000	20000	1000	200000	2000000	2000
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	49.5 U	62.8	49.5 U	169	49.5 U	49.5 U	49.5 U
Max. > Limit	No	No	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12	12	12
Nondetects	12	11	12	11	12	12	12
% Nondetects	100%	92%	100%	92%	100%	100%	100%
Est. Mean*	- -	- -	- -	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	- -	- -

a posteriori Sample	- -	- -	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C04

SAMPLE ID	Fluoranthene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene	1,1-Dichloroethene	Bromodichloromethane	Tetrachloroethene
RLS-C04-1	49.5 U	49.5 U	49.5 U	49.5 U	0.9 U	0.9 U	0.9 U
RLS-C04-3	38.6 U	38.6 U	38.6 U	38.6 U	0.9 U	1.1 U	0.9 U
RLS-C04-4	37.6 U	37.6 U	37.6 U	37.6 U	0.9 U	0.9 U	0.9 U
RLS-C04-5	43.2 U	43.2 U	43.2 U	43.2 U	1.1 U	1 U	1.1 U
RLS-C04-7	39.7 U	39.7 U	39.7 U	39.7 U	1 U	1 U	1 U
RLS-C04-8	39.1 U	39.1 U	39.1 U	39.1 U	1 U	1 U	1 U
RLS-C04-9	39 U	39 U	39 U	39 U	0.9 U	0.9 U	0.9 U
RLS-C04-9-D	38.9 U	38.9 U	38.9 U	38.9 U	1.1 U	1.1 U	1.1 U
RLS-C04-11	37.9 U	37.9 U	37.9 U	37.9 U	1.1 U	1.1 U	1.1 U
RLS-C04-12	39 U	39 U	37.6 U	39 U	0.9 U	0.9 U	0.9 U
RLS-C04-14	38 U	38 U	38 U	38 U	1 U	1 U	1 U
RLS-C04-15	39.1 U	39.1 U	39.1 U	39.1 U	1 U	1 U	1 U
RLS-C04-16	38 U	38 U	38 U	38 U	1 U	1 U	1 U
Limit	10000	20000	5000	10000	410	4000	3600
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	49.5 U	49.5 U	49.5 U	49.5 U	1.1 U	1.1 U	1.1 U
Max. > Limit	No	No	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12	12	12
Nondetects	12	12	12	12	12	12	12
% Nondetects	100%	100%	100%	100%	100%	100%	100%
Est. Mean*	- -	- -	- -	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	- -	- -

a posteriori Sample	- -	- -	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C05

SAMPLE ID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Technetium-99	Thorium-230	Arsenic	Beryllium
RLS-C05-1	0.89 J	0.79 J	0.823 J	0.79 J	4.31 -	1.59 U	0.382 U	6.1 -	0.46 -
RLS-C05-2	0.769 J	0.822 J	0.835 J	0.822 J	5.09 -	1.86 U	0.701 J	6.2 -	0.54 -
RLS-C05-4	0.707 J	0.648 J	0.663 J	0.648 J	4.93 -	1.8 U	0.586 U	5.6 -	0.38 -
RLS-C05-5	0.818 J	0.755 J	0.732 J	0.755 J	4.44 -	1.7 U	0.919 J	5.9 -	0.62 -
RLS-C05-7	1 -	0.827 -	0.885 -	0.827 -	5.43 -	1.92 U	0.687 J	7.4 J	0.78 -
RLS-C05-8	0.911 -	0.886 -	0.921 -	0.886 -	4.3 J	1.79 U	2.01 J	6.2 J	0.66 -
RLS-C05-9	0.775 J	0.68 J	0.662 J	0.68 J	3.99 -	1.49 U	1.1 J	5.1 -	0.42 -
RLS-C05-10	1.1 J	1.19 J	1.22 J	1.19 J	6.02 -	1.7 U	1.23 J	6.8 -	0.67 -
RLS-C05-11	0.991 -	0.988 -	0.992 -	0.988 -	3.78 J	1.93 U	1.4 J	6.4 -	0.69 J
RLS-C05-13	0.859 J	0.812 J	0.806 J	0.812 J	4.27 -	1.74 U	0.991 J	7.6 -	0.63 -
RLS-C05-14	0.948 J	0.868 J	0.85 J	0.868 J	4.63 -	1.92 U	1.28 J	8 -	0.68 -
RLS-C05-14-D	0.758 J	1.06 J	1.07 J	1.06 J	4.93 -	1.91 U	0.623 J	7.9 -	0.77 -
RLS-C05-15	1.47 J	1.32 J	1.32 J	1.32 J	5.83 -	1.57 U	1.68 -	9 -	0.91 J
Limit	1.7	1.8	1.7	1.5	82	30	280	12	1.5
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	pCi/g	mg/kg	mg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%	90%
Max. Result	1.47	1.32	1.32	1.32	6.02	1.93 U	2.01	9	0.91
Max. > Limit	No	No	No	No	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	0	12	2	0	0
% Nondetects	0%	0%	0%	0%	0%	100%	17%	0%	0%
Est. Mean*	- -	- -	- -	- -	- -	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	- -	- -	- -	- -

a posteriori Sample	- -	- -	- -	- -	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -	- -	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C05

SAMPLE ID	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene
RLS-C05-1	38.1 U	38.1 U	38.1 U	38.1 U	38.1 U	38.1 U	38.1 U
RLS-C05-2	38.1 U	38.1 U	38.1 U	38.1 U	38.1 U	38.1 U	38.1 U
RLS-C05-4	38.2 U	52.8 J	38.2 U	131 -	38.2 U	38.2 U	38.2 U
RLS-C05-5	39.5 U	39.5 U	39.5 U	39.5 U	39.5 U	39.5 U	39.5 U
RLS-C05-7	38.1 U	38.1 U	38.1 U	38.1 U	38.1 U	38.1 U	38.1 U
RLS-C05-8	38.2 U	38.2 U	38.2 U	38.2 U	38.2 U	38.2 U	38.2 U
RLS-C05-9	37.7 U	37.7 U	37.7 U	37.7 U	37.7 U	37.7 U	37.7 U
RLS-C05-10	38.5 U	38.5 U	38.5 U	38.5 U	38.5 U	38.5 U	38.5 U
RLS-C05-11	39.3 U	39.3 U	39.3 U	39.3 U	39.3 U	39.3 U	39.3 U
RLS-C05-13	44.7 U	54.2 J	44.7 U	44.7 U	44.7 U	44.7 U	44.7 U
RLS-C05-14	45.8 U	45.8 U	45.8 U	45.8 U	45.8 U	45.8 U	45.8 U
RLS-C05-14-D	44.5 U	44.5 U	44.5 U	44.5 U	44.5 U	44.5 U	44.5 U
RLS-C05-15	40 U	40 U	40 U	40 U	40 U	40 U	40 U
Limit	20000	2000	20000	1000	200000	2000000	2000
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	45.8 U	54.2	45.8 U	131	45.8 U	45.8 U	45.8 U
Max. > Limit	No	No	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12	12	12
Nondetects	12	10	12	11	12	12	12
% Nondetects	100%	83%	100%	92%	100%	100%	100%
Est. Mean*	- -	- -	- -	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	- -	- -

a posteriori Sample	- -	- -	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C05

SAMPLE ID	Fluoranthene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene	1,1-Dichloroethene	Bromodichloromethane	Tetrachloroethene
RLS-C05-1	38.1 U	38.1 U	38.1 U	38.1 U	1 U	1 U	1 U
RLS-C05-2	38.1 U	38.1 U	38.1 U	38.1 U	0.9 U	0.9 U	0.9 U
RLS-C05-4	44.5 J	154 -	38.2 U	38.2 U	0.8 U	0.8 U	0.8 U
RLS-C05-5	39.5 U	39.5 U	39.5 U	39.5 U	0.8 U	0.8 U	0.8 U
RLS-C05-7	38.1 U	38.1 U	38.1 U	38.1 U	1 U	1 U	1 U
RLS-C05-8	38.2 U	38.2 U	38.2 U	38.2 U	0.8 U	0.8 U	0.8 U
RLS-C05-9	37.7 U	37.7 U	37.7 U	37.7 U	1.1 U	1.1 U	1.1 U
RLS-C05-10	38.5 U	38.5 U	38.5 U	38.5 U	0.8 U	0.8 U	0.8 U
RLS-C05-11	39.3 U	39.3 U	39.3 U	39.3 U	0.9 U	0.9 U	0.9 U
RLS-C05-13	56.4 J	44.7 U	44.7 U	44.7 U	1 U	1 U	1 U
RLS-C05-14	45.8 U	45.8 U	45.8 U	45.8 U	1.3 U	1.3 U	1.3 U
RLS-C05-14-D	44.5 U	44.5 U	44.5 U	44.5 U	1.2 U	1.2 U	1.2 U
RLS-C05-15	40 U	40 U	40 U	40 U	0.9 U	0.9 U	0.9 U
Limit	10000	20000	5000	10000	410	4000	3600
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	56.4	154	45.8 U	45.8 U	1.3 U	1.3 U	1.3 U
Max. > Limit	No	No	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12	12	12
Nondetects	11	11	12	12	12	12	12
% Nondetects	92%	92%	100%	100%	100%	100%	100%
Est. Mean*	- -	- -	- -	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	- -	- -

a posteriori Sample	- -	- -	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C06

SAMPLE ID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Technetium-99	Antimony	Arsenic	Beryllium
RLS-C06-1	0.826 J	0.718 J	0.715 J	0.718 J	3.3 J	1.43 U	2.12 UJ	6.4 J	0.52 -
RLS-C06-1-D	1.07 J	0.94 J	0.963 J	0.94 J	3.32 U	1.32 U	3.4 U	5.1 J	0.47 -
RLS-C06-2	0.801 J	0.766 J	0.753 J	0.766 J	3.89 -	1.2 U	2.17 UJ	8.1 J	0.45 -
RLS-C06-3	0.922 J	0.79 J	0.787 J	0.79 J	5.01 -	1.18 U	0.74 U	5 J	0.43 -
RLS-C06-5	0.889 -	0.852 -	0.848 -	0.852 -	4.2 -	1.8 U	2.18 UJ	5.8 J	0.55 -
RLS-C06-7	1.18 -	0.994 -	1.01 -	0.994 -	6.46 -	1.66 U	0.92 U	7 J	0.69 -
RLS-C06-8	0.769 -	0.739 -	0.753 -	0.739 -	4.27 -	1.94 U	0.78 J	5 -	0.52 -
RLS-C06-9	0.884 -	0.722 -	0.762 -	0.722 -	2.93 U	1.92 U	0.442 UJ	6.4 -	0.61 -
RLS-C06-10	0.808 -	0.771 -	0.757 -	0.771 -	4.6 -	1.85 U	2.15 UJ	5.1 -	0.56 -
RLS-C06-12	1.5 -	1.21 -	1.22 -	1.21 -	6.62 -	0.884 U	0.652 U	4.87 -	0.561 -
RLS-C06-13	1.12 -	0.768 -	0.786 -	0.768 -	3.95 J	0.848 U	0.728 U	11.3 -	1.1 -
RLS-C06-15	1.11 -	1.07 -	1.02 -	1.07 -	2.65 J	0.846 U	0.667 U	2.94 -	0.902 -
RLS-C06-16	1.2 -	1.12 -	1.25 -	1.12 -	4.71 J	0.853 U	0.745 U	9.87 -	0.877 -
Limit	1.7	1.8	1.7	1.5	82	30	96	12	1.5
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	mg/kg	mg/kg	mg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%	90%
Max. Result	1.5	1.21	1.25	1.21	6.62	1.94 U	0 .78	11.3	1.1
Max. > Limit	No	No	No	No	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	1	12	11	0	0
% Nondetects	0%	0%	0%	0%	8%	100%	92%	0%	0%
Est. Mean*	- -	- -	- -	- -	- -	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	- -	- -	- -	- -

a posteriori Sample	- -	- -	- -	- -	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -	- -	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C06

SAMPLE ID	Silver	Fluoride	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Carbazole	Dibenzo(a,h)anthracene
RLS-C06-1	0.054 J	2 J	37 U	37 U	37 U	370 U	37 U
RLS-C06-1-D	0.045 J	1.9 J	37.1 U	37.1 U	37.1 U	371 U	37.1 U
RLS-C06-2	0.045 J	2 J	36.9 U	36.9 U	36.9 U	369 U	36.9 U
RLS-C06-3	0.0439 U	2.2 J	37.3 U	37.3 U	37.3 U	373 U	37.3 U
RLS-C06-5	0.055 J	2.32 J	37.5 U	37.5 U	37.5 U	375 UJ	37.5 U
RLS-C06-7	0.067 J	2.5 J	39.1 U	39.1 U	39.1 U	391 UJ	39.1 U
RLS-C06-8	0.047 J	2.34 J	36.8 U	36.8 U	36.8 U	368 U	36.8 U
RLS-C06-9	0.049 J	2.65 J	37.1 U	37.1 U	37.1 U	371 U	37.1 U
RLS-C06-10	0.054 J	2.71 J	37 U	37 U	37 U	370 U	37 U
RLS-C06-12	0.611 U	1.02 U	38.4 U	38.4 U	38.4 U	384 U	38.4 U
RLS-C06-13	0.683 U	1 U	40.6 U	40.6 U	40.6 U	406 U	40.6 U
RLS-C06-15	0.625 U	2.26 U	40.1 U	40.1 U	40.1 U	401 U	40.1 U
RLS-C06-16	0.698 U	1.87 U	40.2 U	40.2 U	40.2 U	402 U	40.2 U
Limit	29000	78000	20000	2000	20000	12000.0	2000
Units	mg/kg	mg/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	0 .067	2.71	40.6 U	40.6 U	40.6 U	406 U	40.6 U
Max. > Limit	No	No	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12	12	12
Nondetects	5	4	12	12	12	12	12
% Nondetects	42%	33%	100%	100%	100%	100%	100%
Est. Mean*	- -	- -	- -	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	- -	- -

a posteriori Sample	- -	- -	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C06

SAMPLE ID	Indeno(1,2,3-cd)pyrene	Aroclor-1254	Aroclor-1260
RLS-C06-1	37 U	3.7 U	3.7 U
RLS-C06-1-D	37.1 U	3.7 U	3.7 U
RLS-C06-2	36.9 U	3.7 U	3.7 U
RLS-C06-3	37.3 U	3.7 U	3.7 U
RLS-C06-5	37.5 U	3.8 U	3.8 U
RLS-C06-7	39.1 U	3.9 U	3.9 U
RLS-C06-8	36.8 U	3.7 U	3.7 U
RLS-C06-9	37.1 U	3.7 U	3.7 U
RLS-C06-10	37 U	3.7 U	3.7 U
RLS-C06-12	38.4 U	3.8 U	3.8 U
RLS-C06-13	40.6 U	4.1 U	4.1 U
RLS-C06-15	40.1 U	4 U	4 U
RLS-C06-16	40.2 U	4 U	4 U
Limit	20000	130	130
Units	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%
Max. Result	40.6 U	4.1 U	4.1 U
Max. > Limit	No	No	No
W-statistic Prob. #	- -	- -	- -
Test Procedure	- -	- -	- -
Sample Size	12	12	12
Nondetects	12	12	12
% Nondetects	100%	100%	100%
Est. Mean*	- -	- -	- -
UCL	- -	- -	- -
Prob. > Limit	- -	- -	- -
Pass / Fail	- -	- -	- -

a posteriori Sample	- -	- -	- -
Size calculation	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C07

SAMPLE ID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Technetium-99	Antimony	Arsenic	Beryllium
RLS-C07-2	1.27 -	0.885 -	0.834 -	0.885 -	6.95 -	0.854 U	0.724 U	8.67 -	0.988 -
RLS-C07-3	1.34 -	1.13 -	1.09 -	1.13 -	4.17 -	0.9 U	0.627 UJ	9.5 -	0.879 -
RLS-C07-4	1.03 -	0.822 -	0.83 -	0.822 -	7.14 -	0.941 U	0.744 UJ	9.2 -	0.895 -
RLS-C07-6	1.16 -	0.878 -	0.82 -	0.878 -	2.66 U	0.932 U	0.716 U	8.62 -	0.7 -
RLS-C07-7	1.24 -	0.95 -	0.984 -	0.95 -	7.57 -	2.72 -	0.738 U	7.8 -	0.944 -
RLS-C07-8	0.934 J	0.873 J	0.904 J	0.873 J	2.68 U	1.37 U	3.6 U	7.9 J	0.65 -
RLS-C07-9	0.922 J	0.749 J	0.739 J	0.749 J	4.09 -	1.25 U	2.23 UJ	6 J	0.52 -
RLS-C07-11	0.73 J	0.786 J	0.813 J	0.786 J	4.2 -	1.3 U	0.66 U	5.5 J	0.46 -
RLS-C07-11-D	0.819 J	0.727 J	0.718 J	0.727 J	3.5 U	1.31 U	0.425 UJ	4.5 J	0.49 -
RLS-C07-12	1.02 J	0.829 J	0.846 J	0.829 J	4.04 U	1.28 U	2.19 UJ	5.8 J	0.52 -
RLS-C07-14	0.799 J	0.81 J	0.826 J	0.81 J	4.85 -	1.21 U	0.66 U	6.5 J	0.43 -
RLS-C07-15	0.973 J	0.954 J	0.936 J	0.954 J	4.44 -	1.42 U	2.22 UJ	6.5 J	0.58 -
RLS-C07-16	0.882 J	0.709 J	0.647 J	0.709 J	4.8 J	1.29 U	1.2 U	6.4 J	0.51 -
Limit	1.7	1.8	1.7	1.5	82	30	96	12	1.5
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	mg/kg	mg/kg	mg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%	90%
Max. Result	1.34	1.13	1.09	1.13	7.57	2.72	3.6 U	9.5	0 .988
Max. > Limit	No	No	No	No	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	3	11	12	0	0
% Nondetects	0%	0%	0%	0%	25%	92%	100%	0%	0%
Est. Mean*	- -	- -	- -	- -	- -	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	- -	- -	- -	- -

a posteriori Sample	- -	- -	- -	- -	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -	- -	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C07

SAMPLE ID	Cadmium	Silver	Fluoride	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Carbazole
RLS-C07-2	0.56 J	0.679 U	0.977 U	39.9 U	39.9 U	39.9 U	399 U
RLS-C07-3	0.325 J	0.603 U	3.46 J	39.7 UJ	49.1 J	39.7 UJ	397 UJ
RLS-C07-4	0.301 J	0.698 U	2.92 J	38 UJ	44.6 J	38 UJ	380 UJ
RLS-C07-6	0.28 U	0.671 U	0.873 U	40.2 U	40.2 U	40.2 U	402 U
RLS-C07-7	0.366 J	0.692 U	0.756 U	40.9 U	40.9 U	40.9 U	409 U
RLS-C07-8	0.32 J	0.069 J	2.49 J	38 U	38 U	38 U	380 UJ
RLS-C07-9	0.26 J	0.048 J	1.73 J	37.5 U	37.5 U	37.5 U	375 U
RLS-C07-11	0.24 J	0.049 J	1.85 J	36.7 U	36.7 U	36.7 U	367 U
RLS-C07-11-D	0.27 J	0.055 J	1.61 J	36.6 U	36.6 U	36.6 U	366 U
RLS-C07-12	0.26 J	0.053 J	2.12 J	36.5 U	36.5 U	36.5 U	365 U
RLS-C07-14	0.28 J	0.058 J	2.42 J	37.5 U	37.5 U	37.5 U	375 U
RLS-C07-15	0.3 J	0.062 J	1.99 J	37 U	37 U	37 U	370 U
RLS-C07-16	0.25 J	0.054 J	1.94 J	36.7 U	36.7 U	36.7 U	367 U
Limit	82	29000	78000	20000	2000	20000	12000.0
Units	mg/kg	mg/kg	mg/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	0 .56	0 .069	3.46	40.9 U	49.1	40.9 U	409 U
Max. > Limit	No	No	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12	12	12
Nondetects	1	5	3	12	10	12	12
% Nondetects	8%	42%	25%	100%	83%	100%	100%
Est. Mean*	- -	- -	- -	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	- -	- -
a posteriori Sample	- -	- -	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C07

SAMPLE ID	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Aroclor-1254	Aroclor-1260
RLS-C07-2	39.9 U	39.9 U	4 U	4 U
RLS-C07-3	39.7 UJ	39.7 UJ	4 U	4 U
RLS-C07-4	38 UJ	38 UJ	3.8 U	3.8 U
RLS-C07-6	40.2 U	40.2 U	4 U	4 U
RLS-C07-7	40.9 U	40.9 U	4.1 U	4.1 U
RLS-C07-8	38 U	38 U	3.8 U	3.8 U
RLS-C07-9	37.5 U	37.5 U	3.8 U	3.8 U
RLS-C07-11	36.7 U	36.7 U	3.7 U	3.7 U
RLS-C07-11-D	36.6 U	36.6 U	3.7 U	3.7 U
RLS-C07-12	36.5 U	36.5 U	3.7 U	3.7 U
RLS-C07-14	37.5 U	37.5 U	3.8 U	3.8 U
RLS-C07-15	37 U	37 U	3.7 U	3.7 U
RLS-C07-16	36.7 U	36.7 U	3.7 U	3.7 U
Limit	2000	20000	130	130
Units	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%
Max. Result	40.9 U	40.9 U	4.1 U	4.1 U
Max. > Limit	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -
Sample Size	12	12	12	12
Nondetects	12	12	12	12
% Nondetects	100%	100%	100%	100%
Est. Mean*	- -	- -	- -	- -
UCL	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -

a posteriori Sample	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C08

SAMPLE ID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Technetium-99	Thorium-230	Antimony	Cadmium
RLS-C08-1	1.08 J	0.98 J	1 J	0.98 J	10.6 -	1.89 U	2.64 -	2.34 UJ	0.37 J
RLS-C08-2	1 J	1.18 J	1.17 J	1.18 J	8.42 -	1.98 U	2.08 -	2.25 UJ	0.34 J
RLS-C08-4	0.899 J	0.907 J	0.926 J	0.907 J	9.07 -	1.76 U	2.13 -	0.428 UJ	0.42 J
RLS-C08-5	1.27 J	0.997 J	0.996 J	0.997 J	11.2 -	1.84 U	1.76 -	0.89 U	0.4 J
RLS-C08-5-D	0.911 J	0.806 J	0.842 J	0.806 J	11.9 -	1.67 U	1.75 -	2.21 UJ	0.4 J
RLS-C08-6	1.12 J	1.14 J	1.16 J	1.14 J	4.84 -	1.96 U	1.46 J	2.31 UJ	0.37 J
RLS-C08-7	0.797 J	0.775 J	0.769 J	0.775 J	8.15 -	1.82 U	1.56 J	0.444 UJ	0.34 J
RLS-C08-9	1.16 J	1.52 J	1.53 J	1.52 J	6.1 -	1.93 U	2.09 -	2.46 UJ	0.22 J
RLS-C08-10	1.06 J	0.959 J	1.14 J	0.959 J	13.7 -	2.03 U	2.09 -	2.34 UJ	0.37 J
RLS-C08-12	1.31 J	1.27 J	1.3 J	1.27 J	10.3 -	1.99 U	1.47 J	2.34 UJ	0.38 J
RLS-C08-14	0.977 -	0.964 -	0.94 -	0.964 -	12.6 -	1.84 U	2.72 -	0.932 UJ	0.23 U
RLS-C08-15	0.984 J	1.01 J	0.982 J	1.01 J	11.3 -	1.96 U	1.64 -	0.454 UJ	0.37 J
RLS-C08-16	1 J	0.855 J	0.858 J	0.855 J	13.1 -	1.88 U	1.85 -	2.14 UJ	0.32 J
Limit	1.7	1.8	1.7	1.5	82	30	280	96	82
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	pCi/g	mg/kg	mg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%	90%
Max. Result	1.31	1.52	1.53	1.52	13.7	2.03 U	2.72	2.46 UJ	0.42
Max. > Limit	No	No	No	Yes	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	68.2% (LN)	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	Lognormal	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	0	12	0	12	1
% Nondetects	0%	0%	0%	0%	0%	100%	0%	100%	8%
Est. Mean*	- -	- -	- -	1.047	- -	- -	- -	- -	- -
UCL	- -	- -	- -	1.159	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	pass	- -	- -	- -	- -	- -
a posteriori Sample	- -	- -	- -	3	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	Pass	- -	- -	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C08

SAMPLE ID	Aroclor-1254	Aroclor-1260
RLS-C08-1	4 U	4 U
RLS-C08-2	3.9 U	3.9 U
RLS-C08-4	3.7 U	3.7 U
RLS-C08-5	3.9 U	3.9 U
RLS-C08-5-D	3.8 U	3.8 U
RLS-C08-6	4 U	4 U
RLS-C08-7	3.8 U	3.8 U
RLS-C08-9	4.1 U	4.1 U
RLS-C08-10	4 U	4 U
RLS-C08-12	4.1 U	4.1 U
RLS-C08-14	6.1 J	3.9 U
RLS-C08-15	4 U	4 U
RLS-C08-16	3.7 U	3.7 U
Limit	130	130
Units	ug/kg	ug/kg
Conf. Level	90%	90%
Max. Result	6.1	4.1 U
Max. > Limit	No	No
W-statistic Prob. #	- -	- -
Test Procedure	- -	- -
Sample Size	12	12
Nondetects	11	12
% Nondetects	92%	100%
Est. Mean*	- -	- -
UCL	- -	- -
Prob. > Limit	- -	- -
Pass / Fail	- -	- -

a posteriori Sample	- -	- -
Size calculation	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C09

SAMPLE ID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Technetium-99	Antimony	Beryllium
RLS-C09-1	0.902 -	0.803 J	0.802 -	0.803 J	10.8 -	1.78 U	6.1 J	1.5 -
RLS-C09-2	1.51 -	1.11 J	1.08 -	1.11 J	6.38 -	1.9 U	9.51 UJ	0.77 -
RLS-C09-3	1.1 -	1.08 -	1.07 -	1.08 -	5.53 -	2.41 U	0.483 UJ	0.82 J
RLS-C09-5	1.07 -	1.13 J	1.14 -	1.13 J	4.48 J	2.2 U	4.62 UJ	0.69 -
RLS-C09-6	1.07 -	1.09 J	1.09 -	1.09 J	6.2 -	1.88 U	9.5 UJ	0.94 -
RLS-C09-8	0.931 -	0.934 J	0.905 -	0.934 J	4.89 -	1.64 U	4.59 UJ	0.63 -
RLS-C09-9	1.39 -	1.09 J	1.1 -	1.09 J	4.35 -	1.94 U	9.37 UJ	0.91 -
RLS-C09-11	1.02 -	0.908 -	0.883 -	0.908 -	3.69 -	2.05 U	0.921 UJ	0.82 J
RLS-C09-12	0.84 -	0.693 -	0.694 -	0.693 -	2.87 U	2.41 U	0.941 UJ	0.72 J
RLS-C09-13	1.1 -	0.825 -	0.802 -	0.825 -	3.21 J	2.28 U	2.8 J	1.6 J
RLS-C09-13-D	0.916 -	0.878 -	0.873 -	0.878 -	4.31 -	2.26 U	0.921 UJ	0.73 J
RLS-C09-14	1.01 -	0.879 -	0.898 -	0.879 -	2.77 J	2.35 U	0.957 UJ	0.4 J
RLS-C09-16	1.03 -	0.752 -	0.725 -	0.752 -	3.05 J	1.02 U	0.501 U	0.603 -
Limit	1.7	1.8	1.7	1.5	82	30	96	1.5
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	mg/kg	mg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%
Max. Result	1.51	1.13	1.14	1.13	10.8	2.41 U	6.1	1.6
Max. > Limit	No	No	No	No	No	No	No	Yes
W-statistic Prob. #	- -	- -	- -	- -	- -	- -	- -	47.1% (LN)
Test Procedure	- -	- -	- -	- -	- -	- -	- -	Lognormal
Sample Size	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	1	12	10	0
% Nondetects	0%	0%	0%	0%	8%	100%	83%	0%
Est. Mean*	- -	- -	- -	- -	- -	- -	- -	0.870
UCL	- -	- -	- -	- -	- -	- -	- -	1.030
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	- -	- -	pass

a posteriori Sample	- -	- -	- -	- -	- -	- -	- -	3
Size calculation	- -	- -	- -	- -	- -	- -	- -	Pass

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-10

SAMPLE ID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Cesium-137	Technetium-99	Thorium-230	Antimony
RLS-C10-1	0.71 J	0.683 -	0.701 -	0.683 -	2.86 J	0.0277 U	1.09 -	1.49 J	0.419 U
RLS-C10-2	0.704 J	0.525 -	0.514 -	0.525 -	4.95 -	0.0295 U	0.853 U	1.19 J	0.391 U
RLS-C10-3	1.17 J	1.01 -	0.958 -	1.01 -	2.78 U	0.0498 U	3.56 -	1.77 J	0.551 J
RLS-C10-5	1.01 -	1.05 J	1.06 J	1.05 J	4.77 -	0.0738 U	1.97 U	2.87 -	1.02 UJ
RLS-C10-7	0.898 -	1.06 -	1.06 -	1.06 -	3.56 -	0.031 U	2.04 U	1.67 -	4.81 UJ
RLS-C10-8	1.05 -	1.05 J	1.06 J	1.05 J	5.78 -	0.0384 U	2.02 U	0.777 J	0.464 UJ
RLS-C10-9	0.897 -	0.89 J	0.895 J	0.89 J	5.44 -	0.0359 U	2.03 U	0.961 J	0.53 U
RLS-C10-11	1.19 -	1.05 -	1.08 -	1.05 -	12.7 -	0.222 -	2.25 U	2.23 -	9.7 UJ
RLS-C10-12	1.06 -	1.11 J	1.15 J	1.11 J	4.72 -	0.0743 U	1.63 U	1 J	0.486 UJ
RLS-C10-12-D	0.909 -	0.6 J	0.592 J	0.6 J	4.04 -	0.0314 U	1.66 U	0.99 J	3.4 U
RLS-C10-13	1.03 -	0.975 J	0.974 J	0.975 J	5.47 -	0.0344 U	1.76 U	1.6 -	0.466 UJ
RLS-C10-14	1.14 -	1.16 J	1.17 J	1.16 J	5.65 -	0.0587 U	1.77 U	0.843 J	0.475 UJ
RLS-C10-16	1.16 -	1 J	0.979 J	1 J	9.65 -	0.0511 U	1.82 U	0.82 J	0.472 UJ
Limit	1.7	1.8	1.7	1.5	82	1.4	30	280	96
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	pCi/g	pCi/g	mg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%	90%
Max. Result	1.19	1.16	1.17	1.16	12.7	0 .222	3.56	2.87	0.551
Max. > Limit	No	No	No	No	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	1	11	10	0	11
% Nondetects	0%	0%	0%	0%	8%	92%	83%	0%	92%
Est. Mean*	- -	- -	- -	- -	- -	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	- -	- -	- -	- -

a posteriori Sample	- -	- -	- -	- -	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -	- -	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-10

SAMPLE ID	Arsenic	Beryllium	Silver	Fluoride	Benzo(a)pyrene	Benzo(b)fluoranthene	Dibenzo(a,h)anthracene
RLS-C10-1	9.18 J	0.536 -	0.592 U	1.28 U	39.1 U	39.1 U	39.1 U
RLS-C10-2	6.99 J	0.212 -	0.552 U	1.39 U	190 -	205 -	38.9 U
RLS-C10-3	12.2 J	0.81 -	0.661 U	1.92 U	39.6 U	39.6 U	39.6 U
RLS-C10-5	7.5 J	1.1 -	0.075 J	1.06 U	42.7 U	42.7 U	42.7 U
RLS-C10-7	11.3 -	0.9 -	0.08 J	2.34 U	40.1 U	40.1 U	40.1 U
RLS-C10-8	5.5 J	0.66 -	0.06 J	1.35 U	39.2 U	47.5 J	39.2 U
RLS-C10-9	6 J	0.58 -	0.055 J	1.18 U	40.5 U	48.2 J	40.5 U
RLS-C10-11	5.1 -	0.46 -	0.052 J	2.27 U	40.6 U	40.6 U	40.6 U
RLS-C10-12	2.3 J	0.42 -	0.0484 U	1.19 U	40.5 U	40.5 U	40.5 U
RLS-C10-12-D	4.9 J	0.43 -	0.047 J	1.12 U	36.4 U	36.4 U	36.4 U
RLS-C10-13	5.6 J	0.53 -	0.055 J	1.02 U	39.7 U	39.7 U	39.7 U
RLS-C10-14	5.3 J	0.64 -	0.061 J	1.34 U	41.3 U	41.3 U	41.3 U
RLS-C10-16	9.1 J	0.79 -	0.072 J	0.87 U	41.1 U	41.1 U	41.1 U
Limit	12	1.5	29000	78000	2000	20000	2000
Units	mg/kg	mg/kg	mg/kg	mg/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	12.2	1.1	0 .08	2.34 U	190	205	42.7 U
Max. > Limit	Yes	No	No	No	No	No	No
W-statistic Prob. #	21.0% (LN)	- -	- -	- -	- -	- -	- -
Test Procedure	Lognormal	- -	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12	12	12
Nondetects	0	0	3	12	11	9	12
% Nondetects	0%	0%	25%	100%	92%	75%	100%
Est. Mean*	7.406	- -	- -	- -	- -	- -	- -
UCL	8.511	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	pass	- -	- -	- -	- -	- -	- -
a posteriori Sample	3	- -	- -	- -	- -	- -	- -
Size calculation	Pass	- -	- -	- -	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-10

SAMPLE ID	Indeno(1,2,3-cd)pyrene	Aroclor-1254	Aroclor-1260	Dieldrin	1,1-Dichloroethene	Bromodichloromethane	Tetrachloroethene
RLS-C10-1	39.1 U	3.9 U	3.9 U	1.6 U	1.2 U	1.2 U	1.2 U
RLS-C10-2	292 -	3.9 U	3.9 U	1.6 U	1.2 U	1.2 U	1.2 U
RLS-C10-3	39.6 U	4 U	4 U	1.6 U	1.2 U	1.2 U	1.2 U
RLS-C10-5	42.7 U	4.3 U	4.3 U	1.7 U	1 U	1 U	1 U
RLS-C10-7	40.1 U	4 U	4 U	1.6 U	1.1 U	1.1 U	1.1 U
RLS-C10-8	116 -	3.9 U	3.9 U	1.6 U	1.2 U	1.2 U	1.2 U
RLS-C10-9	118 -	4.1 U	4.1 U	1.6 U	1.3 U	1.3 U	1.3 U
RLS-C10-11	40.6 U	4.1 U	4.1 U	1.6 U	1.4 U	1.4 U	1.4 U
RLS-C10-12	40.5 U	4.1 U	4.1 U	1.6 U	1 U	1 U	1 U
RLS-C10-12-D	36.4 U	3.6 U	3.6 U	1.5 U	1.5 U	1.5 U	1.5 U
RLS-C10-13	39.7 U	4 U	4 U	1.6 U	1 U	1 U	1 U
RLS-C10-14	41.3 U	4.1 U	4.1 U	1.7 U	1.2 U	1.2 U	1.2 U
RLS-C10-16	107 -	4.1 U	4.1 U	1.6 U	1.1 U	1.1 U	1.1 U
Limit	20000	130	130	15	410	4000	3600
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	292	4.3 U	4.3 U	1.7 U	1.5 U	1.5 U	1.5 U
Max. > Limit	No	No	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12	12	12
Nondetects	8	12	12	12	12	12	12
% Nondetects	67%	100%	100%	100%	100%	100%	100%
Est. Mean*	- -	- -	- -	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	- -	- -
a posteriori Sample	- -	- -	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C11

SAMPLE ID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Cesium-137	Technetium-99	Thorium-230	Antimony
RLS-C11-2	1.25 J	1.25 -	1.25 -	1.25 -	6.1 -	0.073 U	1.9 U	1.67 J	1.2 J
RLS-C11-2-D	1.16 J	1.12 -	1.15 -	1.12 -	4.96 -	0.0428 U	1.74 U	1.16 J	0.98 J
RLS-C11-3	1.09 -	1.01 -	1.03 -	1.01 -	5.61 -	0.0549 U	1.62 U	1.31 -	4.95 UJ
RLS-C11-4	1.26 -	1.05 -	1.03 -	1.05 -	2.77 J	0.0555 U	1.43 U	1.29 -	4.93 UJ
RLS-C11-6	1.06 -	0.99 -	0.955 -	0.99 -	6.32 -	0.0528 U	1.35 U	2.24 -	9.56 UJ
RLS-C11-7	1.23 -	0.924 -	0.904 -	0.924 -	5.82 -	0.0334 U	0.84 U	1.54 J	0.751 U
RLS-C11-8	1.15 -	0.996 -	1.04 -	0.996 -	4.25 J	0.0594 U	0.771 U	3.28 J	0.674 U
RLS-C11-9	1.16 -	0.907 -	0.878 -	0.907 -	4.77 J	0.0562 U	1.46 U	1.2 -	4.76 UJ
RLS-C11-11	1.33 J	1.04 -	1.01 -	1.04 -	6.74 -	0.0411 U	0.847 U	2.2 J	0.552 J
RLS-C11-12	1.22 J	1.02 -	1.07 -	1.02 -	5.11 -	0.037 U	0.816 U	1.58 J	0.459 U
RLS-C11-13	1.05 J	0.985 -	0.991 -	0.985 -	2.39 U	0.0383 U	1.76 U	0.882 J	0.62 J
RLS-C11-14	1.35 J	1.11 -	1.07 -	1.11 -	5.91 -	0.0358 U	0.845 U	2.03 J	0.539 J
RLS-C11-16	1.12 J	0.997 -	0.992 -	0.997 -	6.96 -	0.0555 U	0.887 U	2.14 J	0.506 J
Limit	1.7	1.8	1.7	1.5	82	1.4	30	280	96
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	pCi/g	pCi/g	mg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%	90%
Max. Result	1.35	1.25	1.25	1.25	6.96	0.073 U	1.9 U	3.28	1.2
Max. > Limit	No	No	No	No	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	1	12	12	0	7
% Nondetects	0%	0%	0%	0%	8%	100%	100%	0%	58%
Est. Mean*	- -	- -	- -	- -	- -	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	- -	- -	- -	- -

a posteriori Sample	- -	- -	- -	- -	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -	- -	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C11

SAMPLE ID	Arsenic	Beryllium	Fluoride	Benzo(a)pyrene	Benzo(b)fluoranthene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene
RLS-C11-2	6.6 J	0.76 -	1.99 J	40.9 U	40.9 U	40.9 U	40.9 U
RLS-C11-2-D	6.5 J	0.78 -	1.68 J	41.1 U	124 J	41.1 U	41.1 U
RLS-C11-3	10.2 -	0.89 -	1.71 U	40 U	40 U	40 U	40 U
RLS-C11-4	6.9 -	0.73 -	1.91 U	63.3 J	77.5 J	40.6 U	40.6 U
RLS-C11-6	6 -	0.7 -	1.31 U	50.9 J	41 U	41 U	41 U
RLS-C11-7	5.15 -	0.733 -	2.33 J	42.6 U	129 -	42.6 U	42.6 U
RLS-C11-8	7.87 -	0.6 -	2.01 J	47.1 J	131 -	41.8 U	41.8 U
RLS-C11-9	6.1 -	0.94 -	1.66 U	50.8 J	41 U	41 U	41 U
RLS-C11-11	11.2 J	0.507 -	1.38 U	41.5 U	41.5 U	41.5 U	41.5 U
RLS-C11-12	6.29 J	0.536 -	0.987 U	119 -	99.7 J	40.7 U	40.7 U
RLS-C11-13	5.7 J	0.55 -	1.5 J	41 U	41 U	41 U	41 U
RLS-C11-14	12.8 J	0.843 -	1.23 U	40.9 U	40.9 U	40.9 U	40.9 U
RLS-C11-16	10.9 J	0.757 -	1.29 U	40.5 U	40.5 U	40.5 U	40.5 U
Limit	12	1.5	78000	2000	20000	2000	20000
Units	mg/kg	mg/kg	mg/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	12.8	0 .94	2.33	119	131	42.6 U	42.6 U
Max. > Limit	Yes	No	No	No	No	No	No
W-statistic Prob. #	18.5% (LN)	- -	- -	- -	- -	- -	- -
Test Procedure	Lognormal	- -	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12	12	12
Nondetects	0	0	8	7	7	12	12
% Nondetects	0%	0%	67%	58%	58%	100%	100%
Est. Mean*	7.995	- -	- -	- -	- -	- -	- -
UCL	9.136	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	pass	- -	- -	- -	- -	- -	- -

a posteriori Sample	3	- -	- -	- -	- -	- -	- -
Size calculation	Pass	- -	- -	- -	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C11

SAMPLE ID	Aroclor-1254	Aroclor-1260	Dieldrin	1,1-Dichloroethene	Bromodichloromethane	Tetrachloroethene
RLS-C11-2	4.1 U	4.1 U	1.6 U	1 U	1 U	1 U
RLS-C11-2-D	4.1 U	4.1 U	1.6 U	1.1 U	1.1 U	1.1 U
RLS-C11-3	4.1 U	4.1 U	1.7 U	1 U	1 U	1 U
RLS-C11-4	4.1 U	4.1 U	1.7 U	1.1 U	1.1 U	1.1 U
RLS-C11-6	4 U	4 U	1.6 U	1 U	1 U	1 U
RLS-C11-7	4.3 U	4.3 U	1.7 U	1 U	1 U	1 U
RLS-C11-8	4.2 U	4.2 U	1.7 U	1.2 U	1.2 U	1.2 U
RLS-C11-9	4.1 U	4.1 U	1.6 U	1 U	1 U	1 U
RLS-C11-11	4.2 U	4.2 U	1.7 U	1.1 U	1.1 U	1.1 U
RLS-C11-12	5.8 J	4.1 U	1.6 U	1.2 U	1.2 U	1.2 U
RLS-C11-13	4.1 U	4.1 U	1.6 U	1.1 U	1.1 U	1.1 U
RLS-C11-14	4.1 U	4.1 U	1.6 U	1.2 U	1.2 U	1.2 U
RLS-C11-16	4.1 U	4.1 U	1.6 U	1.1 U	1.1 U	1.1 U
Limit	130	130	15	410	4000	3600
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%
Max. Result	5.8	4.3 U	1.7 U	1.2 U	1.2 U	1.2 U
Max. > Limit	No	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12	12
Nondetects	11	12	12	12	12	12
% Nondetects	92%	100%	100%	100%	100%	100%
Est. Mean*	- -	- -	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	- -

a posteriori Sample	- -	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C12

SAMPLE ID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total
RLS-C12-1	0.997 -	0.871 J	0.898 J	0.871 J	7.18 -
RLS-C12-3	1.14 -	0.953 J	0.923 J	0.953 J	3.46 U
RLS-C12-4	1.04 -	0.744 J	0.688 J	0.744 J	7.36 -
RLS-C12-5	1.14 -	0.864 J	0.892 J	0.864 J	7.28 -
RLS-C12-6	1.11 -	1.02 J	1.09 J	1.02 J	8.12 -
RLS-C12-8	1.31 -	1.06 J	1.08 J	1.06 J	3.25 U
RLS-C12-8-D	1.27 -	1.19 J	1.24 J	1.19 J	4.38 -
RLS-C12-9	0.908 -	0.669 J	0.657 J	0.669 J	7.76 -
RLS-C12-11	1.43 -	0.982 J	1.02 J	0.982 J	6.61 -
RLS-C12-12	0.994 -	0.785 J	0.775 J	0.785 J	7.57 -
RLS-C12-13	0.793 -	0.603 J	0.616 J	0.603 J	4.29 -
RLS-C12-14	0.761 -	0.853 J	0.846 J	0.853 J	4.09 J
RLS-C12-16	1.11 -	0.907 J	0.849 J	0.907 J	3.73 J
Limit	1.7	1.8	1.7	1.5	82
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg
Conf. Level	95%	95%	95%	95%	95%
Max. Result	1.43	1.19	1.24	1.19	8.12
Max. > Limit	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12
Nondetects	0	0	0	0	1
% Nondetects	0%	0%	0%	0%	8%
Est. Mean*	- -	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -

a posteriori Sample	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C13

SAMPLE ID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total
RLS-C13-2	1.2 J	0.752 -	0.837 -	0.752 -	7.46 J
RLS-C13-3	0.753 J	0.475 -	0.481 -	0.475 -	2.97 U
RLS-C13-4	0.707 J	0.597 -	0.602 -	0.597 -	3.3 U
RLS-C13-4-D	0.843 J	0.686 -	0.641 -	0.686 -	3.6 U
RLS-C13-5	1.14 J	0.749 -	0.799 -	0.749 -	4.7 J
RLS-C13-6	0.975 J	0.647 -	0.673 -	0.647 -	3.83 U
RLS-C13-7	0.977 J	0.667 -	0.674 -	0.667 -	2.12 U
RLS-C13-10	0.973 J	0.691 -	0.703 -	0.691 -	6.37 -
RLS-C13-11	1.12 J	0.751 -	0.739 -	0.751 -	8.63 -
RLS-C13-12	1.33 J	1.06 -	1.1 -	1.06 -	8.51 -
RLS-C13-13	0.825 J	0.52 -	0.516 -	0.52 -	3.03 J
RLS-C13-14	1.1 J	0.718 -	0.724 -	0.718 -	3.93 J
RLS-C13-16	0.944 J	0.741 -	0.716 -	0.741 -	3.75 U
Limit	1.7	1.8	1.7	1.5	82
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg
Conf. Level	95%	95%	95%	95%	95%
Max. Result	1.33	1.06	1.1	1.06	8.63
Max. > Limit	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12
Nondetects	0	0	0	0	5
% Nondetects	0%	0%	0%	0%	42%
Est. Mean*	- -	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -

a posteriori Sample	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C14

SAMPLE ID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total
RLS-C14-2	1.24 -	1.35 -	1.39 J	1.35 -	6.99 J
RLS-C14-3	1 -	0.907 -	0.902 J	0.907 -	6.37 J
RLS-C14-4	1.23 -	1.01 -	1.06 J	1.01 -	5.17 J
RLS-C14-5	1.06 -	0.716 -	0.724 J	0.716 -	5.05 J
RLS-C14-6	1.26 -	1.04 -	1.06 J	1.04 -	6.3 J
RLS-C14-8	1.28 -	1.02 -	1.01 J	1.02 -	8.7 J
RLS-C14-10	1.29 -	0.968 -	0.982 J	0.968 -	4.45 J
RLS-C14-11	0.587 -	0.385 -	0.377 J	0.385 -	3.62 J
RLS-C14-11-D	0.631 -	0.421 -	0.435 J	0.421 -	4.57 J
RLS-C14-12	0.985 -	0.83 -	0.793 J	0.83 -	3.91 U
RLS-C14-13	1.29 -	1.01 -	1.05 J	1.01 -	5.89 J
RLS-C14-15	1 -	0.832 -	0.849 J	0.832 -	5.4 J
RLS-C14-16	1.17 -	0.891 -	0.907 J	0.891 -	6.85 J
Limit	1.7	1.8	1.7	1.5	82
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg
Conf. Level	95%	95%	95%	95%	95%
Max. Result	1.29	1.35	1.39	1.35	8.7
Max. > Limit	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12
Nondetects	0	0	0	0	1
% Nondetects	0%	0%	0%	0%	8%
Est. Mean*	- -	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -

a posteriori Sample	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-C15

SAMPLE ID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total
RLS-C15-1	1.53 J	1.16 J	1.17 -	1.16 J	6.34 -
RLS-C15-2	1.47 J	1.26 J	1.28 -	1.26 J	5.64 -
RLS-C15-4	1.05 J	0.712 J	0.712 -	0.712 J	4.61 -
RLS-C15-4-D	0.995 J	0.665 J	0.637 -	0.665 J	3.52 U
RLS-C15-5	1.87 J	1.53 J	1.72 -	1.53 J	8.71 -
RLS-C15-6	1.55 J	1.22 J	1.2 -	1.22 J	7.41 -
RLS-C15-7	1.29 J	1.07 J	1.08 -	1.07 J	6.87 -
RLS-C15-9	1.71 J	1.33 J	1.31 -	1.33 J	7.73 -
RLS-C15-10	1.28 J	1.13 J	1.12 -	1.13 J	5.93 -
RLS-C15-11	1.09 J	0.724 J	0.73 -	0.724 J	5.02 -
RLS-C15-13	1.23 J	1.19 J	1.22 -	1.19 J	8.4 -
RLS-C15-15	1.27 J	0.96 J	0.965 -	0.96 J	4.36 J
RLS-C15-16	0.868 J	0.6 J	0.605 -	0.6 J	5.83 -
Limit	1.7	1.8	1.7	1.5	82
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg
Conf. Level	95%	95%	95%	95%	95%
Max. Result	1.87	1.53	1.72	1.53	8.71
Max. > Limit	Yes	No	Yes	Yes	No
W-statistic Prob. #	95.7% (N)	- -	51.5% (N)	53.4% (N)	- -
Test Procedure	Normal	- -	Normal	Normal	- -
Sample Size	12	12	12	12	12
Nondetects	0	0	0	0	0
% Nondetects	0%	0%	0%	0%	0%
Est. Mean*	1.351	- -	1.093	1.074	- -
UCL	1.499	- -	1.252	1.217	- -
Prob. > Limit	- -	- -	- -	- -	- -
Pass / Fail	pass	- -	pass	pass	- -

a posteriori Sample	6	- -	3	4	- -
Size calculation	Pass	- -	Pass	Pass	- -

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APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-16

SAMPLE ID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total
RLS-C16-1	1.22 -	1.02 -	1 -	1.02 -	5.99 -
RLS-C16-2	1.33 -	1.16 -	1.16 -	1.16 -	6.71 -
RLS-C16-3	1.66 -	1.23 -	1.27 -	1.23 -	5.78 -
RLS-C16-5	1.3 -	1.04 -	1.01 -	1.04 -	5.18 -
RLS-C16-6	1.28 -	1.1 -	1.08 -	1.1 -	4.25 -
RLS-C16-8	1.19 -	1.01 -	0.99 -	1.01 -	3.85 -
RLS-C16-9	1.28 -	1.07 -	1.09 -	1.07 -	5.45 -
RLS-C16-11	1.48 -	1.28 -	1.32 -	1.28 -	6.9 -
RLS-C16-12	1.17 J	1.03 J	1.1 -	1.03 J	6.84 -
RLS-C16-13	1.21 -	1.05 -	1.09 -	1.05 -	6.16 -
RLS-C16-14	1.3 -	1.19 -	1.19 -	1.19 -	6.25 -
RLS-C16-14-D	1.31 -	1.13 -	1.11 -	1.13 -	6.73 -
RLS-C16-15	1.25 -	1.03 -	1.03 -	1.03 -	6.72 -
Limit	1.7	1.8	1.7	1.5	82
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg
Conf. Level	95%	95%	95%	95%	95%
Max. Result	1.66	1.28	1.32	1.28	6.9
Max. > Limit	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12
Nondetects	0	0	0	0	0
% Nondetects	0%	0%	0%	0%	0%
Est. Mean*	- -	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -

a posteriori Sample	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -

PENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-STRATIFIED FILL CU

SAMPLE ID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Technetium-99	Thorium-230	Arsenic
RLS-C01-1-F	1.25 -	1.07 -	1.05 -	1.07 -	3.35 U	- -	- -	5.06 J
RLS-C02-1-F	0.929 -	0.913 -	0.908 -	0.913 -	6.71 -	- -	- -	9.2 J
RLS-C03-1-F	1.01 J	0.942 J	0.965 J	0.942 J	3.39 -	- -	- -	11 J
RLS-C02-2-F	0.935 -	0.984 -	0.93 -	0.984 -	3.68 -	- -	- -	9.1 J
RLS-C03-2-F	0.961 J	0.971 J	0.965 J	0.971 J	3.99 -	- -	- -	5.3 J
RLS-C03-3-F	1.09 J	0.961 J	0.97 J	0.961 J	5.06 J	- -	- -	8.6 J
RLS-C04-3-F	0.865 -	0.855 -	0.86 -	0.855 -	4.88 J	1.96 U	1.55 J	5.7 -
RLS-C04-4-F	0.946 -	1.03 -	1.01 -	1.03 -	4.12 J	1.98 U	1.82 -	7.6 -
RLS-C04-7-F	0.979 -	0.978 -	0.971 -	0.978 -	4.58 J	2.07 U	0.914 J	5.5 -
RLS-C04-8-F	0.965 -	1.06 J	1.07 J	1.06 J	3.56 J	1.54 U	1.42 -	7.3 J
RLS-C04-9-F	0.995 J	0.866 J	0.9 J	0.866 J	4.83 -	1.55 U	1.09 -	6.3 -
RLS-C04-9-D-F	1.23 J	1.05 J	1.07 J	1.05 J	4.03 -	1.61 U	1.01 -	6.4 -
RLS-C04-11-F	0.879 -	0.923 -	0.892 -	0.923 -	6.85 -	1.61 U	2.07 J	6.5 J
RLS-C04-12-F	0.909 J	0.923 J	0.955 J	0.923 J	4.9 -	1.43 U	1.29 -	5.6 -
RLS-C04-14-F	0.912 -	0.917 -	0.918 -	0.917 -	5.13 -	1.87 U	0.977 J	8.2 J
RLS-C04-15-F	1.13 -	0.977 J	0.979 J	0.977 J	7.12 -	1.63 U	1.31 -	6.4 -
RLS-C04-16-F	1.15 -	1.13 J	1.14 J	1.13 J	5.54 -	1.54 U	1.52 -	7.2 -
RLS-C05-11-F	0.936 -	0.915 -	0.895 -	0.915 -	2.91 J	2.08 U	1.02 J	8.7 -
RLS-C05-15-F	1.27 J	1.1 J	1.11 J	1.1 J	6.36 -	1.47 U	1.03 -	11.6 -
Limit	1.7	1.8	1.7	1.5	82	30	280	12
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	pCi/g	mg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%
Max. Result	1.27	1.13	1.14	1.13	7.12	2.08 U	2.07	11.6
Max. > Limit	No	No	No	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -	- -	- -	- -
Sample Size	18	18	18	18	18	12	12	18
Nondetects	0	0	0	0	1	12	0	0
% Nondetects	0%	0%	0%	0%	6%	100%	0%	0%
Est. Mean*	- -	- -	- -	- -	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	- -	- -	- -
a posteriori Sample	- -	- -	- -	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-STRATIFIED FILL CU

SAMPLE ID	Beryllium	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene
RLS-C01-1-F	0.521 -	- -	- -	- -	- -	- -	- -
RLS-C02-1-F	0.51 -	- -	- -	- -	- -	- -	- -
RLS-C03-1-F	0.8 -	- -	- -	- -	- -	- -	- -
RLS-C02-2-F	0.76 -	- -	- -	- -	- -	- -	- -
RLS-C03-2-F	0.54 -	- -	- -	- -	- -	- -	- -
RLS-C03-3-F	0.9 -	- -	- -	- -	- -	- -	- -
RLS-C04-3-F	0.61 J	37.5 U	37.5 U	37.5 U	37.5 U	37.5 U	37.5 U
RLS-C04-4-F	0.66 J	38.7 U	38.7 U	38.7 U	38.7 U	38.7 U	38.7 U
RLS-C04-7-F	0.52 J	38.5 U	38.5 U	38.5 U	38.5 U	38.5 U	38.5 U
RLS-C04-8-F	0.67 -	37.9 U	37.9 U	37.9 U	37.9 U	37.9 U	37.9 U
RLS-C04-9-F	0.5 J	37.9 U	37.9 U	37.9 U	37.9 U	37.9 U	37.9 U
RLS-C04-9-D-F	0.52 J	39.1 U	39.1 U	39.1 U	39.1 U	39.1 U	39.1 U
RLS-C04-11-F	0.71 -	38.8 U	38.8 U	38.8 U	38.8 U	38.8 U	38.8 U
RLS-C04-12-F	0.54 J	37.6 U	37.6 U	37.6 U	37.6 U	37.6 U	37.6 U
RLS-C04-14-F	0.82 -	38.5 U	38.5 U	38.5 U	38.5 U	38.5 U	38.5 U
RLS-C04-15-F	0.83 -	38.7 U	38.7 U	38.7 U	38.7 U	38.7 U	38.7 U
RLS-C04-16-F	0.7 -	40.6 U	40.6 U	40.6 U	40.6 U	40.6 U	40.6 U
RLS-C05-11-F	0.81 J	38 U	38 U	38 U	38 U	38 U	38 U
RLS-C05-15-F	0.68 J	39.6 U	39.6 U	39.6 U	39.6 U	39.6 U	39.6 U
Limit	1.5	20000	2000	20000	1000	200000	2000000
Units	mg/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	0.9	40.6 U	40.6 U	40.6 U	40.6 U	40.6 U	40.6 U
Max. > Limit	No	No	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -	- -	
Test Procedure	- -	- -	- -	- -	- -	- -	- -
Sample Size	18	12	12	12	12	12	12
Nondetects	0	12	12	12	12	12	12
% Nondetects	0%	100%	100%	100%	100%	100%	100%
Est. Mean*	- -	- -	- -	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	- -	- -
a posteriori Sample	- -	- -	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -	- -	- -

PENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-STRATIFIED FILL CU

SAMPLE ID	Dibenzo(a,h)anthracene	Fluoranthene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene	Aroclor-1254	Aroclor-1260
RLS-C01-1-F	- -	- -	- -	- -	- -	3.8 U	3.8 U
RLS-C02-1-F	- -	- -	- -	- -	- -	3.9 U	3.9 U
RLS-C03-1-F	- -	- -	- -	- -	- -	3.9 U	3.9 U
RLS-C02-2-F	- -	- -	- -	- -	- -	3.9 U	3.9 U
RLS-C03-2-F	- -	- -	- -	- -	- -	3.9 U	3.9 U
RLS-C03-3-F	- -	- -	- -	- -	- -	3.9 U	3.9 U
RLS-C04-3-F	37.5 U	37.5 U	37.5 U	37.5 U	37.5 U	- -	- -
RLS-C04-4-F	38.7 U	38.7 U	38.7 U	38.7 U	38.7 U	- -	- -
RLS-C04-7-F	38.5 U	38.5 U	38.5 U	38.5 U	38.5 U	- -	- -
RLS-C04-8-F	37.9 U	37.9 U	37.9 U	37.9 U	37.9 U	- -	- -
RLS-C04-9-F	37.9 U	37.9 U	37.9 U	37.9 U	37.9 U	- -	- -
RLS-C04-9-D-F	39.1 U	39.1 U	39.1 U	39.1 U	39.1 U	- -	- -
RLS-C04-11-F	38.8 U	38.8 U	38.8 U	38.8 U	38.8 U	- -	- -
RLS-C04-12-F	37.6 U	37.6 U	37.6 U	37.6 U	37.6 U	- -	- -
RLS-C04-14-F	38.5 U	38.5 U	38.5 U	38.5 U	38.5 U	- -	- -
RLS-C04-15-F	38.7 U	38.7 U	38.7 U	38.7 U	38.7 U	- -	- -
RLS-C04-16-F	40.6 U	40.6 U	40.6 U	40.6 U	40.6 U	- -	- -
RLS-C05-11-F	38 U	38 U	38 U	38 U	38 U	- -	- -
RLS-C05-15-F	39.6 U	39.6 U	39.6 U	39.6 U	39.6 U	- -	- -
Limit	2000	10000	20000	5000	10000	130	130
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	40.6 U	40.6 U	40.6 U	40.6 U	40.6 U	3.9 U	3.9 U
Max. > Limit	No	No	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12	6	6
Nondetects	12	12	12	12	12	6	6
% Nondetects	100%	100%	100%	100%	100%	100%	100%
Est. Mean*	- -	- -	- -	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	- -	- -
a posteriori Sample	- -	- -	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-STRATIFIED FILL CU

SAMPLE ID	1,1-Dichloroethene	Bromodichloromethane	Tetrachloroethene
RLS-C01-1-F	- -	- -	- -
RLS-C02-1-F	- -	- -	- -
RLS-C03-1-F	- -	- -	- -
RLS-C02-2-F	- -	- -	- -
RLS-C03-2-F	- -	- -	- -
RLS-C03-3-F	- -	- -	- -
RLS-C04-3-F	1 U	1 U	1 U
RLS-C04-4-F	1 U	1 U	1 U
RLS-C04-7-F	0.9 U	0.9 U	0.9 U
RLS-C04-8-F	1 U	1 U	1 U
RLS-C04-9-F	0.9 U	0.9 U	0.9 U
RLS-C04-9-D-F	1 U	1 U	1 U
RLS-C04-11-F	1 U	1 U	1 U
RLS-C04-12-F	1.1 U	1.1 U	1.1 U
RLS-C04-14-F	1.1 U	1.1 U	1.1 U
RLS-C04-15-F	0.9 U	0.9 U	0.9 U
RLS-C04-16-F	0.9 U	0.9 U	0.9 U
RLS-C05-11-F	0.9 U	0.9 U	0.9 U
RLS-C05-15-F	1.1 U	1.1 U	1.1 U
Limit	410	4000	3600
Units	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%
Max. Result	1.1 U	1.1 U	1.1 U
Max. > Limit	No	No	No
W-statistic Prob. #	- -	- -	- -
Test Procedure	- -	- -	- -
Sample Size	12	12	12
Nondetects	12	12	12
% Nondetects	100%	100%	100%
Est. Mean*	- -	- -	- -
UCL	- -	- -	- -
Prob. > Limit	- -	- -	- -
Pass / Fail	- -	- -	- -

a posteriori Sample	- -	- -	- -
Size calculation	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-SOIL UNDER RAIL TRESTLE CU

Sample ID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Cesium-137	Technetium-99	Thorium-230	Antimony
A6-UT-1	1.02 -	0.725 -	0.697 -	0.725 -	2.68 U	0.0622 J	0.858 U	1.27 -	0.688 U
A6-UT-2	0.942 -	0.813 -	0.842 -	0.813 -	2.87 U	0.091 U	0.882 U	0.973 -	0.467 U
A6-UT-3	1.18 -	0.952 -	1.01 -	0.952 -	3.44 U	0.066 J	0.817 U	1.18 -	0.688 U
A6-UT-4	1.09 -	0.994 -	0.998 -	0.994 -	3.37 U	0.0615 U	0.797 U	1.18 -	0.462 U
A6-UT-5	1.04 -	0.855 -	0.883 -	0.855 -	3.73 U	0.0712 U	0.83 U	1.08 -	0.795 U
A6-UT-6	1.05 -	0.903 -	0.892 -	0.903 -	4.77 J	0.19 -	0.919 U	1.13 -	0.632 J
A6-UT-7	0.619 -	0.637 -	0.673 -	0.637 -	3.04 U	0.0564 U	0.81 U	0.878 -	0.422 U
A6-UT-8	0.874 -	0.55 -	0.54 -	0.55 -	2.61 U	0.242 -	0.77 U	1.5 -	0.482 U
A6-UT-9	0.775 -	0.478 -	0.492 -	0.478 -	2.42 U	0.184 -	8.16 -	1.23 -	0.406 U
A6-UT-10	0.676 -	0.515 -	0.513 -	0.515 -	3.67 J	0.0579 U	0.785 U	0.994 -	0.449 U
A6-UT-11	0.845 -	0.681 -	0.696 -	0.681 -	10.9 -	0.232 -	1.07 -	1.87 -	0.699 U
A6-UT-12	0.979 -	0.647 -	0.645 -	0.647 -	11 -	0.284 -	0.817 U	2.66 -	1.01 U
Limit	1.7	1.8	1.7	1.5	82	1.4	30	280	96
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	pCi/g	pCi/g	mg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%	90%
Max. Result	1.18	0.994	1.01	0.994	11	0.284	8.16	2.66	0.632
Max. > Limit	No	No	No	No	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	8	5	10	0	11
% Nondetects	0%	0%	0%	0%	67%	42%	83%	0%	92%
Est. Mean*	- -	- -	- -	- -	- -	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	- -	- -	- -	- -

a posteriori Sample	- -	- -	- -	- -	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -	- -	- -	- -	- -

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-SOIL UNDER RAIL TRESTLE CU

Sample ID	Arsenic	Beryllium	Cadmium	Silver	Fluoride	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene
A6-UT-1	10.4 -	0.728 -	0.296 J	0.147 U	2.47 J	1160 J	1200 J	4430 J
A6-UT-2	5.16 -	0.749 -	0.357 J	0.148 U	1.2 J	2030 J	1740 J	6340 J
A6-UT-3	4.97 -	0.604 -	0.193 J	0.142 U	2.41 J	3420 J	2330 J	7330 -
A6-UT-4	5.95 -	0.798 -	0.287 J	0.147 U	2.19 J	672 J	790 J	2780 J
A6-UT-5	7.99 -	0.873 -	0.301 J	0.137 U	2.37 J	594 J	572 J	2050 J
A6-UT-6	6.59 -	0.747 -	0.318 J	0.139 U	1 J	1020 J	798 J	3510 J
A6-UT-7	4.37 -	0.448 -	0.19 J	0.134 U	0.85 J	3310 J	2280 J	8290 J
A6-UT-8	5.62 -	0.565 -	0.311 J	0.136 U	0.627 J	6540 J	4830 J	17300 J
A6-UT-9	5.04 -	0.347 -	0.295 J	0.129 U	0.449 J	3030 J	3140 J	12800 J
A6-UT-10	5.39 -	0.459 -	0.38 J	0.143 U	0.609 J	573 J	552 J	2620 J
A6-UT-11	11 -	0.603 -	0.345 J	0.125 U	0.903 J	4730 J	3420 J	21700 J
A6-UT-12	8.57 -	1.04 -	0.684 J	0.118 U	0.673 J	5810 J	4240 J	25900 J
Limit	12	1.5	82	29000	78000	20000	2000	20000
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%	0.9	0.9
Max. Result	11	1.04	0.684	0.148 U	2.47	6540	4830	25900
Max. > Limit	No	No	No	No	No	No	Yes	Yes
W-statistic Prob. #	- -	- -	- -	- -	- -	- -	34.8% (LN)	53.0% (LN)
Test Procedure	- -	- -	- -	- -	- -	- -	Lognormal	Lognormal
Sample Size	12	12	12	12	12	12	12	12
Nondetects	0	0	0	12	0	0	0	0
% Nondetects	0%	0%	0%	100%	0%	0%	0%	0%
Est. Mean*	- -	- -	- -	- -	- -	- -	2271.135	9989.833
UCL	- -	- -	- -	- -	- -	- -	3490.448	16462.794
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	- -	FAIL	pass

a posteriori Sample	- -	- -	- -	- -	- -	- -	88	4
Size calculation	- -	- -	- -	- -	- -	- -	Fail	Pass

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-SOIL UNDER RAIL TRESTLE CU

Sample ID	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Indeno(1,2,3-cd)pyrene	Phenanthrene
A6-UT-1	955 -	37 U	3790 J	37 U	3350 J	1030 J	880 J
A6-UT-2	1280 -	38 U	5310 J	38 U	5890 J	1370 J	1130 J
A6-UT-3	1580 -	34.3 U	4980 J	34.3 U	6270 J	1660 J	1150 J
A6-UT-4	562 -	37.9 U	2200 J	37.9 U	2470 J	592 J	528 J
A6-UT-5	502 -	35 U	1990 J	35 U	2300 J	497 J	636 J
A6-UT-6	749 -	38.7 U	2690 J	38.7 U	3730 J	788 J	576 J
A6-UT-7	1580 -	34.2 U	7710 J	34.2 U	16400 J	1700 J	9410 J
A6-UT-8	3390 -	35.8 U	15000 J	35.8 U	22600 J	3610 -	5450 J
A6-UT-9	2480 -	34.8 U	9470 J	34.8 U	12600 J	2690 -	2910 J
A6-UT-10	508 -	35.7 U	2530 J	35.7 U	4070 J	561 J	1470 J
A6-UT-11	2810 -	34 U	23000 J	34 U	30600 J	3240 -	8410 J
A6-UT-12	3220 -	21500 J	26700 J	817 -	35700 J	3720 -	10000 J
Limit	1000	200000	2000000	2000	10000	20000	5000
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	0.9	90%	90%	90%	90%	90%	0.9
Max. Result	3390	21500	26700	817	35700	3720	10000
Max. > Limit	Yes	No	No	No	Yes	No	Yes
W-statistic Prob. #	27.4% (LN)	- -	- -	- -	29.7% (LN)	- -	8.3% (LN)
Test Procedure	Lognormal	- -	- -	- -	Lognormal	- -	Lognormal
Sample Size	12	12	12	12	12	12	12
Nondetects	0	11	0	11	0	0	0
% Nondetects	0%	92%	0%	92%	0.0%	0%	0%
Est. Mean*	1695.435	- -	- -	- -	12770.9	- -	3818.4
UCL	2488.199	- -	- -	- -	23560.7	- -	8255.1
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	FAIL	- -	- -	- -	FAIL	- -	FAIL

a posteriori Sample	34	- -	- -	- -	76	- -	8
Size calculation	Fail	- -	- -	- -	Fail	- -	Pass

APPENDIX A
STATISTICAL EVALUATION OF CERTIFICATION SAMPLING - SOIL
RLS-SOIL UNDER RAIL TRESTLE CU

Sample ID	Pyrene	Aroclor-1254	Aroclor-1260	Dieldrin	1,1-Dichloroethene	Bromodichloromethane	Tetrachloroethene
A6-UT-1	3680 J	18.5 U	18.5 U	29.6 U	1.2 U	1.2 U	1.2 UJ
A6-UT-2	7150 J	26.8 -	19 U	30.4 U	1 U	1 U	1 UJ
A6-UT-3	7780 J	17.2 U	17.2 U	27.5 U	1.1 U	1.1 U	1.1 UJ
A6-UT-4	2260 J	34.4 -	19 U	30.3 U	1.1 U	1.1 U	1.1 UJ
A6-UT-5	2030 J	17.5 U	17.5 U	28 U	1.3 U	1.3 U	1.3 UJ
A6-UT-6	4020 J	19.3 U	19.3 U	30.9 U	1.1 U	1.1 U	1.1 UJ
A6-UT-7	14200 J	21.9 J	28.6 J	27.3 U	1.3 U	1.3 U	1.3 UJ
A6-UT-8	23000 J	17.9 U	17.9 U	28.6 U	1.1 U	1.1 U	1.1 UJ
A6-UT-9	12100 J	17.4 U	17.4 U	27.9 U	1.1 U	1.1 U	1.1 UJ
A6-UT-10	4130 J	17.9 U	17.9 U	28.6 U	1.2 U	1.2 U	1.2 UJ
A6-UT-11	24900 J	20 -	17 U	27.2 U	1.5 U	1.5 U	1.5 UJ
A6-UT-12	32500 J	17.7 U	17.7 U	28.4 U	1.5 U	1.5 U	1.5 UJ
Limit	10000	130	130	15	410	4000	3600
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	0.9	90%	90%	90%	90%	90%	90%
Max. Result	32500	34.4	28.6	30.9 U	1.5 U	1.5 U	1.5 UJ
Max. > Limit	Yes	No	No	No	No	No	No
W-statistic Prob. #	49.1% (LN)	- -	- -	- -	- -	- -	- -
Test Procedure	Lognormal	- -	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12	12	12
Nondetects	0	8	11	12	12	12	12
% Nondetects	0%	67%	92%	100%	100%	100%	100%
Est. Mean*	12197.4	- -	- -	- -	- -	- -	- -
UCL	21657.9	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	FAIL	- -	- -	- -	- -	- -	- -
a posteriori Sample	66	- -	- -	- -	- -	- -	- -
Size calculation	Fail	- -	- -	- -	- -	- -	- -

APPENDIX B

BALLAST PRECERTIFICATION SAMPLES, ANALYTICAL RESULTS AND FINAL STATISTICS TABLES

APPENDIX B
STATISTICAL ABBREVIATIONS AND SYMBOLS

The procedure used to determine if the data are to be assumed to be either normally distributed or lognormally distributed is outlined in Section G.2.3 of Appendix G to the SEP. The second paragraph under "Step 3: Perform the Shapiro-Wilk Test to evaluate if the data are normally or lognormally distributed" states that "If the Shapiro-Wilk Test indicates both normal and lognormal distributions fit the data, the distribution with the highest p-value will be used in the Student's t-Test (Section G.2.2.2) to make the certification decision." Therefore, the distribution testing procedure is not a matter of transforming the data and then testing for lognormality only when the normality assumption fails as the comment seems to imply. The method is to test both normality and lognormality and select the distribution that "best" fits the data as defined by the test yielding the higher p-value above a minimum acceptable value. The minimum acceptable p-value for acceptance of a distribution was set at 0.05.

If the maximum result for each analyte is below the FRL, no statistical result needs to be reported. For all statistical evaluations, the maximum value of the two duplicates was used.

Abbreviations:

Est. Mean* - Estimated measure of central tendency (Normal: Mean; LogNorrmal: Est Mean; Non-Parametric: Median)

W-Statistic Probability - Shapiro-Wilk probability of the "better" fit - either normal or lognormal (note: a value less than 0.05 indicates that neither normality nor lognormality could be accepted, but the highest p-value is still shown). The test is performed on the raw untransformed data (N) and the log-transformed data (LN) to test for lognormality.

t-Test (N) - indicates that the normal distribution is best fit to data with a p-value greater than or equal to 0.05.

t-Test (LN) - indicates that the lognormal distribution is best fit to data with a p-value greater than or equal to 0.05.

Sign Test - the Sign test was used because one of the following situations occurred:

4. there were greater than 50 percent non-detects,
5. between 15 and 50 percent non-detects and data not symmetrically distributed,
6. less than 15 percent non-detects, but fails Shapiro-Wilk test for both normality and lognormality and data not symmetrically distributed.

Wilcoxon SR - the Wilcoxon Signed Rank procedure was used because of one of the following situations:

3. between 15 and 50 percent non-detects and data symmetrically distributed,
4. less than 15 percent non-detects, but fails Shapiro-Wilk test for both normality and lognormality and data symmetrically distributed.

Note: Data was considered to be "symmetrically distributed" if the Standardized Skewness had an Absolute Value of less than or equal to 2.00 (i.e., between -2.00 and 2.00).

Number of NDs - number of non-detects.

APPENDIX B
Ballast West of Paddys Run

Sample ID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Lead-210	Technetium-99	Thorium-230	Neptunium-237	Arsenic
BLST-15	0.725 -	0.447 -	0.441 -	0.447 -	1.31 U	--	--	--	--	--
BLST-28	0.47 -	0.225 -	0.214 -	0.225 -	2.22 J	2.13 U	2.3 U	0.407 J	0.135 U	3.8 J
BLST-29	0.385 -	0.22 -	0.213 -	0.22 -	2.1 J	5.12 U	2.18 U	0.398 J	0.1 U	2.8 J
BLST-30	0.305 -	0.165 -	0.165 -	0.165 -	2.48 -	2.43 U	2.26 U	0.541 J	0.187 U	4.9 J
BLST-31	0.414 -	0.17 -	0.171 -	0.17 -	0.986 U	0.581 J	2.02 U	0.464 -	0.126 U	3.4 J
BLST-32	0.464 -	0.191 -	0.18 -	0.191 -	2.46 -	0.49 J	2.03 U	0.516 -	0.18 U	3.8 J
BLST-33	0.517 -	0.334 -	0.328 -	0.334 -	1.9 J	4.34 U	2.05 U	0.437 -	0.136 U	8 J
BLST-34	0.367 -	0.141 -	0.149 -	0.141 -	0.894 U	1.52 U	2.38 U	0.18 U	0.091 U	1.48 J
BLST-35	0.375 -	0.211 -	0.22 -	0.211 -	1.53 -	0.289 J	2.48 U	0.305 J	0.088 U	2.2 J
BLST-36	0.403 -	0.167 -	0.188 -	0.167 -	1.3 U	3.28 U	2.02 U	0.238 J	0.078 U	2.8 J
BLST-37	0.322 -	0.156 -	0.155 -	0.156 -	0.903 U	2.67 U	2.01 U	0.289 J	0.076 U	4.1 J
BLST-38	0.446 -	0.259 -	0.259 -	0.259 -	1.84 J	3.74 U	1.99 U	0.413 -	0.094 U	3.9 J
BLST-39	0.399 -	0.177 -	0.185 -	0.177 -	2.61 -	2.45 U	1.99 U	0.405 J	0.094 U	2.9 J
BLST-40	0.382 -	0.242 -	0.252 -	0.242 -	1.34 U	5.16 U	2.07 U	0.467 -	0.078 U	3 J
BLST-41	0.466 -	0.24 -	0.25 -	0.24 -	1.58 J	0.434 J	2.09 U	0.402 J	0.112 U	4.1 J
BLST-42	0.505 -	0.214 -	0.207 -	0.214 -	2.35 J	2.63 U	2.28 U	0.267 J	0.15 U	1.9 J
BLST-43	0.834 -	0.501 -	0.495 -	0.501 -	1.39 J	3 U	1.98 U	0.364 J	0.126 U	4.5 J
BLST-44	2.2 -	2.52 -	2.91 -	2.52 -	12.3 -	4.32 U	1.89 U	2.37 -	0.122 U	6.3 J
BLST-45	0.161 -	0.106 -	0.101 -	0.106 -	1.03 J	2.84 U	1.77 U	0.253 U	0.114 U	1.8 J
BLST-46	0.159 -	0.0697 -	0.0723 -	0.0697 -	0.702 U	1.64 U	1.85 U	0.425 U	0.102 U	4.1 J
BLST-47	0.201 -	0.131 -	0.13 -	0.131 -	0.845 J	2.48 U	1.85 U	0.436 J	0.125 U	1.46 UJ
Limit	1.7	1.8	1.7	1.5	82	38	30	280	3.2	12.0
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%	90%	90%
Max. Result	2.2	2.52	2.91	2.52	12.3	0.581	2.48 U	2.37	0.187 U	8
Max. >= Limit	Yes	Yes	Yes	Yes	No	No	No	No	No	No
W-statistic Prob. #	1.5% (LN)	< 0.01% (LN)	< 0.01% (LN)	< 0.01% (LN)	--	--	--	--	--	--
Test Procedure	Median (Sign)	Median (Sign)	Median (Sign)	Median (Sign)	--	--	--	--	--	--
Sample Size	21	21	21	21	21	20	20	20	20	20
Nondetects	0	0	0	0	7	16	20	3	20	1
% Nondetects	0.0%	0%	0%	0%	33%	80%	100%	15%	100%	5%
Est. Mean*	0.403	0.211	0.207	0.211	--	--	--	--	--	--
UCL	0.466	0.240	0.250	0.240	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--	--	--
Pass / Fail	Pass	Pass	Pass	Pass	--	--	--	--	--	--
a posteriori Sample	5	5	5	5	--	--	--	--	--	--
Size calculation	Pass	Pass	Pass	Pass	--	--	--	--	--	--

APPENDIX B
Ballast West of Paddys Run

Sample ID	Barium	Beryllium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	Benzo(a)anthracene
BLST-15	--	--	--	--	--	--	--	--	--
BLST-28	21.6 J	0.25 -	0.12 J	4.5 J	6.4 J	0.0077 J	0.508 U	0.0407 U	814 J
BLST-29	22.3 J	0.26 -	0.13 J	6.2 J	6.3 J	0.0054 J	0.507 U	0.0406 U	1840 J
BLST-30	23.9 J	0.31 -	0.19 -	6.2 J	8.9 J	0.0047 J	0.58 J	0.042 J	1250 J
BLST-31	27.6 J	0.23 -	0.16 J	6.6 J	9.7 J	0.01 J	2.45 U	0.196 U	394 J
BLST-32	18.2 J	0.14 J	0.104 U	9.2 J	7.9 J	0.0069 J	2.6 U	0.208 U	734 J
BLST-33	33 J	0.23 -	0.13 J	12.4 J	7.7 J	0.0066 J	2.69 U	0.215 U	2100 -
BLST-34	8.6 J	0.0989 U	0.0989 U	5 J	2.8 J	0.0046 J	2.47 U	0.198 U	322 J
BLST-35	20.7 J	0.0997 U	0.0997 U	3.6 J	4.5 J	0.0059 J	2.49 U	0.199 U	1160 J
BLST-36	8.4 J	0.1 U	0.1 U	3.4 J	8.6 J	0.0063 J	2.5 U	0.2 U	359 J
BLST-37	18.8 J	0.17 -	0.14 J	12.9 J	5.7 J	0.005 J	2.47 U	0.198 U	371 J
BLST-38	24.5 J	0.27 -	0.105 U	11.7 J	6.5 J	0.0071 J	2.62 U	0.21 U	1370 J
BLST-39	22 J	0.11 J	0.12 J	5.8 J	3.9 J	0.019 J	2.48 U	0.199 U	486 J
BLST-40	24.5 J	0.19 -	0.15 J	7.3 J	5.9 J	0.0054 J	2.61 U	0.208 U	545 J
BLST-41	17.7 J	0.12 J	0.13 J	5.1 J	4.7 J	0.0097 J	2.51 U	0.201 U	34.7 U
BLST-42	9.7 J	0.12 J	0.0981 U	6.2 J	2.7 J	0.0076 J	2.45 U	0.196 U	580 J
BLST-43	34.3 J	0.47 -	0.16 J	7.3 J	12.3 J	0.011 J	2.5 U	0.2 U	460 J
BLST-44	46 J	0.24 -	0.55 J	16.4 J	58.8 -	0.065 J	2.52 UJ	0.202 U	33.7 U
BLST-45	6 J	0.1 J	0.0992 U	3.3 J	3.6 J	0.0024 J	2.48 UJ	0.198 U	33.5 U
BLST-46	13.1 J	0.14 J	0.1 J	7.5 J	6.3 J	0.003 J	2.5 UJ	0.2 U	462 J
BLST-47	4.3 J	0.0975 U	0.0975 U	4 J	2.2 J	0.003 J	2.44 UJ	0.195 U	33.6 U
Limit	68000	2	82	300	400	7.5	5,400	29,000	20000
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%	90%	90%
Max. Result	46	0.47	0.55	16.4	58.8	0.065	0.58	0.042	2100
Max. >= Limit	No	No	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--	--	--
Sample Size	20	20	20	20	20	20	20	20	20
Nondetects	0	4	8	0	0	0	19	19	4
% Nondetects	0%	20%	40%	0%	0%	0%	95%	95%	20%
Est. Mean*	--	--	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--	--	--

a posteriori Sample	--	--	--	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--	--	--	--

APPENDIX B
Ballast West of Paddys Run

Sample ID	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene
BLST-15	--	--	--	--	--	--	--
BLST-28	980 -	2140 J	807 -	34.4 J	1270 J	34.4 J	1420 J
BLST-29	1790 -	5270 J	1050 -	68.3 J	3460 J	68.3 J	4840 J
BLST-30	1640 -	3270 J	1260 -	34.3 J	1920 J	34.3 J	2100 J
BLST-31	567 -	1650 J	526 -	34.3 U	917 J	208 -	1060 -
BLST-32	987 -	2110 -	812 -	695 J	1520 J	308 -	2010 -
BLST-33	3210 -	4700 -	1800 -	2160 J	2420 J	638 -	2570 -
BLST-34	494 -	1170 J	410 -	34.6 U	502 J	204 -	543 -
BLST-35	1410 -	3740 -	1100 -	34.8 U	1600 J	400 -	1440 -
BLST-36	430 -	1430 J	378 -	34.6 U	981 J	195 J	1240 -
BLST-37	420 -	1280 J	350 -	34.5 U	811 J	183 J	1400 -
BLST-38	1490 -	4460 -	1020 -	35.4 U	2570 J	350 -	2830 -
BLST-39	637 -	1650 J	538 -	34.8 U	819 J	226 -	861 -
BLST-40	612 -	2290 -	489 -	34.7 U	1540 J	212 -	3410 -
BLST-41	70.7 J	66.9 J	94.3 J	34.7 U	40.1 J	117 J	44.5 J
BLST-42	611 -	2130 -	494 -	34.2 U	1130 J	219 -	1660 -
BLST-43	692 -	1860 J	546 -	34.9 U	843 J	240 -	745 -
BLST-44	200 -	415 J	259 -	33.7 U	163 J	33.7 U	133 -
BLST-45	89.3 J	277 J	150 -	33.5 U	262 J	33.5 U	477 -
BLST-46	421 -	1410 J	350 -	33.7 U	1080 J	33.7 U	1980 -
BLST-47	80.5 J	184 J	139 -	33.6 U	147 J	33.6 U	221 -
Limit	2000	20000	1000	200000	2000000	2000	10000
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	3210	5270	1800	2160	3460	638	4840
Max. >= Limit	Yes	No	Yes	No	No	No	No
W-statistic Prob. #	20.2% (LN)	- -	57.2% (LN)	- -	- -	- -	- -
Test Procedure	Lognormal	- -	Lognormal	- -	- -	- -	- -
Sample Size	20	20	20	20	20	20	20
Nondetects	0	0	0	15	0	4	0
% Nondetects	0%	0%	0%	75%	0%	20%	0%
Est. Mean*	953.7	- -	659.8	- -	- -	- -	- -
UCL	1522.3	- -	891.1	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	pass	- -	pass	- -	- -	- -	- -
a posteriori Sample	4	- -	7	- -	- -	- -	- -
Size calculation	Pass	- -	Pass	- -	- -	- -	- -

APPENDIX B
Ballast West of Paddys Run

Sample ID	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene
BLST-15	--	--	--
BLST-28	688 J	148 J	1430 J
BLST-29	938 J	1130 J	4580 J
BLST-30	1170 J	311 J	2060 J
BLST-31	466 J	161 J	845 -
BLST-32	748 J	448 J	1480 -
BLST-33	1720 J	172 J	2320 -
BLST-34	365 J	80.3 J	596 -
BLST-35	966 J	199 J	1850 -
BLST-36	362 J	255 J	1010 -
BLST-37	331 J	351 J	1170 -
BLST-38	942 J	328 J	2660 -
BLST-39	469 J	122 J	879 -
BLST-40	469 J	1100 -	2400 -
BLST-41	111 J	34.7 U	38.9 J
BLST-42	473 J	289 J	1400 -
BLST-43	480 J	126 J	706 -
BLST-44	241 J	33.7 U	127 -
BLST-45	156 J	140 J	336 -
BLST-46	350 J	508 -	1640 -
BLST-47	146 J	73.1 J	148 -
Limit	20000	5000	10000
Units	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%
Max. Result	1720	1130	4580
Max. >= Limit	No	No	No
W-statistic Prob. #	- -	- -	- -
Test Procedure	- -	- -	- -
Sample Size	20	20	20
Nondetects	0	2	0
% Nondetects	0%	10%	0%
Est. Mean*	- -	- -	- -
UCL	- -	- -	- -
Prob. > Limit	- -	- -	- -
Pass / Fail	- -	- -	- -

a posteriori Sample	- -	- -	- -
Size calculation	- -	- -	- -

APPENDIX B
Ballast East of Paddys Run

Sample ID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Cesium-137	Lead-210	Technetium-99
BLST-2	0.764 -	0.565 -	0.64 -	0.565 -	4.67 -	--	0.817 J	2.08 U
BLST-3	1.04 -	0.76 -	0.759 -	0.76 -	5.58 -	--	0.557 U	2.27 U
BLST-4	1.77 -	0.992 -	1 -	0.992 -	10 -	--	0.716 U	2.14 U
BLST-5	1.63 -	0.891 -	0.929 -	0.891 -	8.93 -	--	0.747 U	0.899 U
BLST-6	1.43 -	1.05 -	1.12 -	1.05 -	7.86 -	--	0.585 U	2.11 U
BLST-7	0.451 -	0.331 -	0.33 -	0.331 -	1.22 U	--	0.463 U	1.09 U
BLST-8	0.499 -	0.302 -	0.297 -	0.302 -	1.95 J	--	--	1.82 J
BLST-9	0.502 -	0.304 -	0.307 -	0.304 -	1.29 U	--	--	0.813 U
BLST-10	0.504 -	0.323 -	0.336 -	0.323 -	2 J	--	--	0.876 U
BLST-11	0.553 -	0.302 -	0.303 -	0.302 -	3.4 -	--	--	1.26 U
BLST-12	0.574 -	0.215 -	0.221 -	0.215 -	4.82 -	0.0954 -	--	0.849 U
BLST-13	0.476 -	0.223 -	0.222 -	0.223 -	3.62 U	0.0968 -	--	2 U
BLST-14	0.274 -	0.163 -	0.148 -	0.163 -	1.68 U	0.0377 U	--	1.91 U
BLST-48	0.261 -	0.146 -	0.147 -	0.146 -	1.07 U	--	4.13 U	1.76 U
BLST-49	0.222 -	0.221 -	0.224 -	0.221 -	1.02 J	--	1.95 J	1.81 U
BLST-50	0.246 -	0.175 -	0.173 -	0.175 -	1.15 J	--	3.05 U	1.85 U
BLST-51	0.259 -	0.0859 -	0.0906 -	0.0859 -	0.622 J	--	1.79 U	1.92 U
Limit	1.7	1.8	1.7	1.5	82	1.4	38	29
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	pCi/g	pCi/g
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%
Max. Result	1.77	1.05	1.12	1.05	10	0.0968	1.95	1.82
Max. >= Limit	Yes	No	No	No	No	No	No	No
W-statistic Prob. #	13.5% (LN)	--	--	--	--	--	--	--
Test Procedure	Lognormal	--	--	--	--	--	--	--
Sample Size	17	17	17	17	17	3	10	17
Nondetects	0	0	0	0	5	1	8	16
% Nondetects	0%	0%	0%	0%	29%	33%	80%	94%
Est. Mean*	0.675	--	--	--	--	--	--	--
UCL	0.978	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--
Pass / Fail	pass	--	--	--	--	--	--	--
a posteriori Sample	4	--	--	--	--	--	--	--
Size calculation	Pass	--	--	--	--	--	--	--

APPENDIX B
Ballast East of Paddys Run

Sample ID	Thorium-230	Neptunium-237	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium
BLST-2	2.09 -	--	0.808 U	--	--	--	0.411 J	--
BLST-3	1.74 J	--	0.802 U	--	--	--	1.63 -	--
BLST-4	1.94 J	--	0.897 U	--	--	--	1.3 -	--
BLST-5	2.36 J	--	0.855 U	--	--	--	1.02 -	--
BLST-6	2.47 J	--	0.933 U	--	--	--	1.4 -	--
BLST-7	1.19 J	--	0.786 U	--	--	--	0.118 J	--
BLST-8	--	--	0.826 U	15.1 J	--	0.128 J	0.0949 J	--
BLST-9	--	--	0.879 U	15.2 J	--	0.146 J	0.0953 J	--
BLST-10	--	--	0.791 U	12.5 J	--	0.176 J	0.115 J	--
BLST-11	--	--	0.877 U	14.7 -	--	0.129 J	0.236 J	--
BLST-12	1.97 -	--	0.84 U	2.58 -	--	0.156 J	--	--
BLST-13	0.491 NV	--	4.1 U	1.8 -	--	0.12 J	--	--
BLST-14	0.196 NV	--	3.6 U	4.5 -	--	0.14 J	--	--
BLST-48	0.464 J	0.168 U	--	9.8 J	6.5 J	0.0989 U	0.17 J	9.9 J
BLST-49	0.429 U	0.249 U	--	2.8 J	7.2 J	0.0959 U	0.12 J	5.8 J
BLST-50	0.454 J	0.102 U	--	3.7 J	11.2 J	0.101 J	0.14 J	1.7 J
BLST-51	2.54 -	0.13 U	--	11.9 J	10.6 J	0.18 -	0.11 J	6.3 J
Limit	280	3.2	10	12	68000	1.5	82	300
Units	pCi/g	pCi/g	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%	90%
Max. Result	2.54	0.249 U	4.1 U	15.2	11.2	0.18	1.63	9.9
Max. >= Limit	No	No	No	Yes	No	No	No	No
W-statistic Prob. #	- -	- -	- -	5.9% (LN)	- -	- -	- -	- -
Test Procedure	- -	- -	- -	Lognormal	- -	- -	- -	- -
Sample Size	13	4	13	11	4	11	14	4
Nondetects	1	4	13	0	0	2	0	0
% Nondetects	8%	100%	100%	0%	0%	18%	0%	0%
Est. Mean*	- -	- -	- -	**9.260**	- -	- -	- -	- -
UCL	- -	- -	- -	**15.151**	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	**FAIL**	- -	- -	- -	- -
a posteriori Sample	- -	- -	- -	**10**	- -	- -	- -	- -
Size calculation	- -	- -	- -	**Pass**	- -	- -	- -	- -

APPENDIX B
Ballast East of Paddys Run

Sample ID	Lead	Mercury	Selenium	Silver	Fluoride	Benzo(a)anthracene	Benzo(a)pyrene
BLST-2	--	--	--	--	--	--	--
BLST-3	--	--	--	--	--	--	--
BLST-4	--	--	--	--	--	--	--
BLST-5	--	--	--	--	--	--	--
BLST-6	--	--	--	--	--	--	--
BLST-7	--	--	--	--	--	--	--
BLST-8	--	--	--	0.131 U	0.813 J	35.1 U	35.1 U
BLST-9	--	--	--	0.14 U	0.3 U	34.8 U	34.8 U
BLST-10	--	--	--	0.126 U	0.296 U	77.4 J	74.8 J
BLST-11	--	--	--	0.279 U	1.06 J	71.5 J	38.2 J
BLST-12	--	--	--	0.267 U	1.4 J	--	617 -
BLST-13	--	--	--	0.0405 U	0.804 J	--	2640 -
BLST-14	--	--	--	0.0404 U	0.289 U	--	1210 -
BLST-48	2.9 J	0.0023 U	2.47 UJ	0.198 U	--	33.4 U	33.4 U
BLST-49	2 J	0.0025 U	2.4 UJ	0.192 U	--	33.5 U	64.6 J
BLST-50	2.3 J	0.0023 U	2.52 UJ	0.202 U	--	33.6 U	33.6 U
BLST-51	8.8 J	0.0053 J	2.43 UJ	0.194 U	--	33.5 U	86.8 J
Limit	400	7.5	5400	29000	78000	20000	2000
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	8.8	0.0053	2.52 UJ	0.279 U	1.4	77.4	2640
Max. >= Limit	No	No	No	No	No	No	Yes
W-statistic Prob. #	- -	- -	- -	- -	- -	- -	4.3% (LN)
Test Procedure	- -	- -	- -	- -	- -	- -	Median (Sign)
Sample Size	4	4	4	11	7	8	11
Nondetects	0	3	4	11	3	6	4
% Nondetects	0%	75%	100%	100%	43%	75%	36%
Est. Mean*	- -	- -	- -	- -	- -	- -	64.6
UCL	- -	- -	- -	- -	- -	- -	617
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	- -	Pass

a posteriori Sample	- -	- -	- -	- -	- -	- -	5
Size calculation	- -	- -	- -	- -	- -	- -	Pass

ArPENDIX B
Ballast East of Paddys Run

Sample ID	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	ibenzo(a,h)anthrace	Fluoranthene
BLST-2	--	--	--	--	--	--
BLST-3	--	--	--	--	--	--
BLST-4	--	--	--	--	--	--
BLST-5	--	--	--	--	--	--
BLST-6	--	--	--	--	--	--
BLST-7	--	--	--	--	--	--
BLST-8	49.7 J	--	--	--	35.1 U	--
BLST-9	104 -	--	--	--	34.8 U	--
BLST-10	275 -	--	--	--	35 U	--
BLST-11	143 -	--	--	--	35.5 U	--
BLST-12	1950 -	--	--	--	35.3 U	--
BLST-13	6140 -	--	--	--	502 -	--
BLST-14	2030 -	--	--	--	237 -	--
BLST-48	76.6 J	33.4 U	33.4 U	33.4 U	33.4 U	61.3 J
BLST-49	91.2 J	33.5 U	33.5 U	33.5 U	33.5 U	65.1 J
BLST-50	78.2 J	33.6 U	33.6 U	33.6 U	33.6 U	47.1 J
BLST-51	322 J	142 -	33.5 U	360 J	33.5 U	560 -
Limit	20000	1000	200000	2000000	2000	10000
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%
Max. Result	6140	142	33.6 U	360	502	560
Max. >= Limit	No	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -	- -
Sample Size	11	4	4	4	11	4
Nondetects	0	3	4	3	9	0
% Nondetects	0%	75%	100%	75%	82%	0%
Est. Mean*	- -	- -	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	- -
a posteriori Sample	- -	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -	- -

APPENDIX B
Ballast East of Paddys Run

Sample ID	Indeno(1,2,3-cd)pyrene	Carbazole	Phenanthrene	Pyrene	Aroclor-1254	Aroclor-1260	Dieldrin
BLST-2	--	--	--	--	--	--	--
BLST-3	--	--	--	--	--	--	--
BLST-4	--	--	--	--	--	--	--
BLST-5	--	--	--	--	--	--	--
BLST-6	--	--	--	--	--	--	--
BLST-7	--	--	--	--	--	--	--
BLST-8	43.4 J	351 U	--	--	3.5 U	3.5 U	--
BLST-9	48.5 J	348 U	--	--	3.5 U	3.5 U	--
BLST-10	114 -	350 U	--	--	3.5 U	3.5 U	--
BLST-11	35.5 U	355 U	--	--	3.6 U	3.6 U	--
BLST-12	587 -	--	--	--	10.5 J	5.2 J	1.4 U
BLST-13	1340 -	--	--	--	3.5 U	3.5 U	1.4 U
BLST-14	683 -	--	--	--	3.4 U	3.4 U	1.4 U
BLST-48	33.4 U	--	33.4 U	33.4 U	--	--	--
BLST-49	33.5 U	--	33.5 U	33.5 U	--	--	--
BLST-50	33.6 U	--	33.6 U	33.6 U	--	--	--
BLST-51	150 J	--	209 J	356 -	--	--	--
Limit	20000	12000	5000	10000	130	130	15
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	1340	355 U	209	356	10.5	5.2	1.4 U
Max. >= Limit	No	No	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -	- -	- -
Sample Size	11	4	4	4	7	7	3
Nondetects	4	4	3	3	6	6	3
% Nondetects	36%	100%	75%	75%	86%	86%	100%
Est. Mean*	- -	- -	- -	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	- -	- -
a posteriori Sample	- -	- -	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -	- -	- -

APPENDIX B
Ballast in Railyard

Sample ID	Arsenic	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene
BLST-16	10.8 -	33.3 U	33.3 U	37.4 J	33.3 U	33.3 U
BLST-17	9.48 -	33.3 U	33.3 U	35.3 J	33.3 U	33.3 U
BLST-18	7.85 -	33.3 U	33.3 U	38 J	33.3 U	33.3 U
BLST-19	7.38 -	33.3 U	33.3 U	33.3 U	33.3 U	33.3 U
BLST-20	10.5 -	33.4 U	33.4 U	33.4 U	33.4 U	33.4 U
BLST-21	9.94 -	33.4 U	33.4 U	33.4 U	33.4 U	33.4 U
BLST-22	16 -	33.4 U	33.4 U	33.4 U	33.4 U	33.4 U
BLST-23	8.61 -	33.3 U	33.3 U	33.3 U	33.3 U	33.3 U
BLST-24	14.8 -	33.4 U	33.4 U	33.4 U	33.4 U	33.4 U
BLST-25	6.61 -	33.3 U	33.3 U	33.3 U	33.3 U	33.3 U
BLST-26	5.09 -	33.4 U	33.4 U	33.4 U	33.4 U	33.4 U
BLST-27	10.9 -	72.2 J	53.6 J	33.3 U	33.3 U	109 J
Limit	12	20000	2000	20000	1000	200000
Units	mg/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%
Max. Result	16	72.2	53.6	38	33.4 U	109
Max. >= Limit	Yes	No	No	No	No	No
W-statistic Prob. #	92.5% (LN)	- -	- -	- -	- -	- -
Test Procedure	Lognormal	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12	12
Nondetects	0	11	11	9	12	11
% Nondetects	0%	91.7%	91.7%	75%	100%	92%
Est. Mean*	9.9	- -	- -	- -	- -	- -
UCL	11.4	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -
Pass / Fail	pass	- -	- -	- -	- -	- -
a posteriori Sample	9	- -	- -	- -	- -	- -
Size calculation	Pass	- -	- -	- -	- -	- -

APPENDIX B
Ballast in Railyard

Sample ID	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene
BLST-16	33.3 U	33.3 U	39.6 J	33.3 U	33.3 U	33.3 U
BLST-17	33.3 U	33.3 U	36.5 J	33.3 U	33.3 U	33.3 U
BLST-18	33.3 U	33.3 U	44.4 J	33.3 U	33.3 U	33.3 U
BLST-19	33.3 U	33.3 U	33.3 U	33.3 U	33.3 U	33.3 U
BLST-20	33.4 U	33.4 U	33.4 U	33.4 U	33.4 U	33.4 U
BLST-21	33.4 U	33.4 U	33.4 U	33.4 U	33.4 U	33.4 U
BLST-22	33.4 U	33.4 U	61.3 J	33.4 U	42.1 J	33.4 U
BLST-23	33.3 U	33.3 U	33.3 U	33.3 U	33.3 U	33.3 U
BLST-24	33.4 U	33.4 U	33.4 U	33.4 U	33.4 U	33.4 U
BLST-25	33.3 U	33.3 U	33.3 U	33.3 U	33.3 U	33.3 U
BLST-26	33.4 U	33.4 U	33.4 U	33.4 U	33.4 U	33.4 U
BLST-27	153 J	33.3 U	751 -	107 J	511 -	348 -
Limit	2000000	2000	10000	20000	5000	10000
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%
Max. Result	153	33.4 U	751	107	511	348
Max. >= Limit	No	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12	12
Nondetects	11	12	7	11	10	11
% Nondetects	92%	100%	58%	92%	83%	92%
Est. Mean*	- -	- -		- -	- -	- -
UCL	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -	- -

a posteriori Sample	- -	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -	- -

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APPENDIX C
CORRECTION OF 7-DAY RADIUM-226 RESULTS

APPENDIX C
CORRECTION OF 7-DAY RADIUM-226 RESULTS

On July 10, 2006, OEPA approved DOE's July 6, 2006 request to reduce the in-growth period for radon, with the stipulation that additional soil samples would be collected from non-certified areas to verify initial assumptions and finalize the documentation of the process. This attachment to the certification report presents the analytical results for 7- and 21-day in-growth periods for samples collected from non-certified areas, as described in variance 20810-PSP-0004-36.

Figure 1 summarizes the results for 48 samples collected from non-certified areas. A regression of the data ($R^2 = 0.9969$) yields the following equation for the estimate of the 21-day value:

21-day value = 1.053*7-day value – 0.0156

This correction will be applied to 7-day analytical results to yield an estimate of the 21-day result. If statistical calculations are performed in the certification report, the estimate for 21-day results will be used to determine the pass/fail criteria for the certification units.

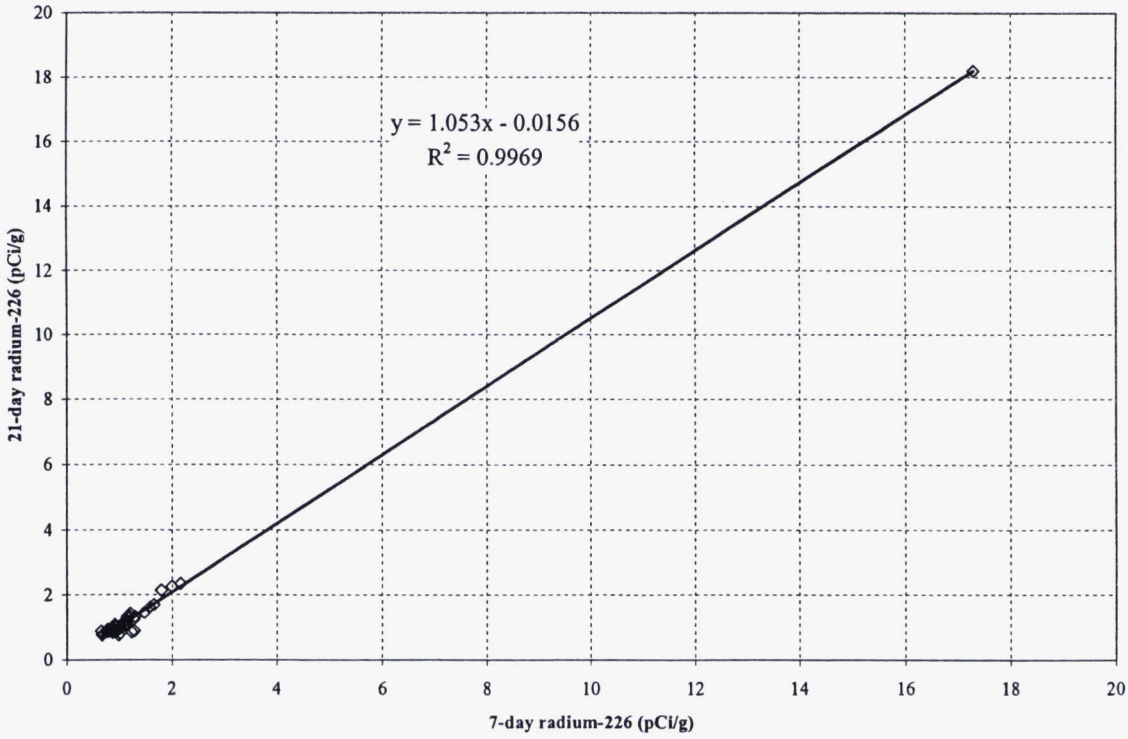


FIGURE 1. Regression analysis of radium-226 data based on 7- and 21-day ingrowth period for radon-222

APPENDIX D
VARIANCES ASSOCIATED WITH THE SITE-WIDE RAIL LINE SYSTEM CERTIFICATION EFFORT

VARIANCE / FIELD CHANGE NOTICE (Include justification):

This Variance/Field Change Notice (V/FCN) documents the collection of physical soil samples for precertification of the Sitewide Rail Line System Area, which is shown on Figure 1.

The selection of precertification sampling locations was conducted according to Section 3.4.2 of the Sitewide Excavation Plan. The defined area was gridded in the same manner defined for group 1 CUs. During this gridding process, 16 areas were defined (see Figure 2 and 3). Each of these defined areas was then sub-divided into 16 approximately equal sub-areas. Sample locations were then generated by randomly selecting an easting and northing coordinate within the boundaries of each sub-area, then testing those locations against the minimum distance criteria for each defined area to ensure that all 16 random locations have sufficient spacing. If the minimum distance criteria were not met, an alternative random location was selected for that sub-area, and all the locations were re-tested. This process continued until all random locations met the minimum distance criteria as defined by the SEP.

All Sitewide Rail Line System sub-areas and planned precertification sampling locations are shown on Figures 4 through 12. As stated in the Excavation Plan for Area 6 Waste Pits and General Area (DOE 2005), samples collected from the western half of the railyard will include sampling of both native and fill soil. These locations are identified in Attachment 3. The top 0 to 6 inches from each type of soil shall be collected for analysis. Based on topography evaluations completed during predesign, the sampling depth for the native soil has been defined for each sample location, and is provided in Attachment 3. For the remaining areas, samples will be collected for analysis from the top 0 to 6 inches of native soil. Four of the 16 sample locations are designated with a "V", indicating that these are archive sample locations. Archive samples will not be collected unless they are needed for additional analysis. One sample location in each of the defined areas has been designated with a "D", indicating a field duplicate sample collection location.

Each sample location will be surveyed (by the surveying group) prior to sampling. Because the majority of the samples will be collected from the top 0 to 6 inches of native soil that is underlying ballast material used to build up the ground that holds the rail and tracks, it will be necessary for the sampling team to complete a field walk down to identify locations requiring a penetration permit. Sample locations may only be moved (greater than 3 feet) with the concurrence of characterization personnel. See, Attachment 1 for the Sampling and Analytical Requirements, Attachment 2 for the Target Analyte Lists, and Attachment 3 for the Sample Identifiers and Locations.

Soil samples will be collected in accordance with procedure SMPL-01, "Solids Sampling". All activities associated with this sampling event will comply with Data Quality Objective SL-052, Revision 3.

If "push tubes" are used for sample collection, two container blanks will be collected – one before sample collection begins and one at the conclusion of sample collection. The container blank samples will be analyzed for the radiological and the metal COCs as identified in Attachments 2 and 3. If an alternate sample collection method is used, one rinsate will be collected at a minimum frequency of one per 20 pieces of equipment reused in the field. Rinsates and/or container blanks will be analyzed for the same rad and metal TALs from the precertification area sampled. A trip blank is required if VOC samples are being collected. The frequency for a trip blank is one per day, or one per batch of 20 samples collected, or one per cooler to be shipped, whichever is more frequent.

All field data will be validated. Sample analyses will be conducted to Analytical Support Level (ASL) D or E, where all requirements for ASL E are the same as ASL D except the minimum detection level for the selected analytical method must be at least 10 percent of the FRL. A minimum of 10 percent of the laboratory data will be validated to Validation Support Level (VSL) D with the remainder validated to VSL B. Specifically, samples collected from areas RLS-C04, RLS-C05, RLS-C07, RLS-C10, and RLS-C11 will be validated to VSL D.

As shown on Attachment 1, each sample will be assigned a unique sample ID number as *Remediation Area-C##-Location^F or N-x-Analysis-QC*, where:

RLS	= Sample Collected from the Rail Line System
C##	= Precertification Area from which sample is collected (01 through 16)
Location	= Sample location number within Precertification Area (1 through 16)
^	= Separates location number and analysis type
F	= For use with samples as identified in Attachment 3; identifies soils as "fill" soil.
N-*x*	= For use with samples as identified in Attachment 3; identifies soil as "native" soil and *x* defines the depth interval indicator equal to two times the bottom depth for the respective interval and is measured in feet, i.e., "2" = 2 x 1.
Analysis	= "R" = radiological; "M" = metals; "P" = pesticides and/or PCBs; "S" = semi-volatiles or PAHs; "L" = VOCs
QC	= "V" = archive sample; "D" = duplicate sample; "Y1" = first container blank; "X1" = first rinsate; "TB1" = first trip blank

Surveying Required: Yes - by surveying group.
Field QC Samples Required: Yes
Field Data Validation: Yes
Analytical Data Validation: Yes - VSL B/D (90/10).
Off-site Data Package Requirements (as applicable): ASL D. A 10-day TAT is required for the final data package and EDD reporting of all non-gamma analyses. For gamma analysis, a preliminary EDD is due on a 10-day TAT; a final data package and EDD is to be reported on a 30-day TAT (see Attachment 1).

Historical Data for shipping: 23.5 mg/kg total uranium from boring location A6-SA3-8.

Justification:
As required by the SEP, all soil demonstrated to contain contamination above the associated FRLs and other applicable action levels was evaluated for remedial action. Historical and Predesign data for the Sitewide Rail Line System Area was collected during the RI/FS and various predesign investigations. Based on the results of sampling activities discussed in the below-listed documents, it has been determined that no further remedial activities are needed.

- Post-Excavation As-Built Report for Area 7, Phase 1 (DOE 2004)
- Excavation Plan for Area 6 Waste Pits and General Area (DOE 2005)
- Excavation Plan for Area 7 Silos and General Area (DOE 2005)
- Excavation Plan for Area 7 Support and Silos Process Area (DOE 2005)

The sampling activities outlined in this V/FCN are an effort to illustrate that moving forward with the recertification/certification process in this area is an acceptable course of action.

REQUESTED BY: Denise Arico Date: 12/14/05

IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
	QUALITY ASSURANCE: R. Fiske	1-5-06	X	PROJECT MANAGER: J.D. Chisu	12/27/05
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER: F. Miller	12/21/05
	ANALYTICAL CUSTOMER SUPPORT:	1/10/06		RTIMP Manager	
	WAO		X	SAMPLING MANAGER: T. Buhrlage T.E.B.	1/3/06

VARIANCE/FCN APPROVED [X]YES [ ]NO REVISION REQUIRED: [ ]YES [X]NO

DISTRIBUTION

PROJECT MANAGER:	DOCUMENT CONTROL: Jeannie Rosser	OTHER:
QUALITY ASSURANCE:	CHARACTERIZATION MANAGER: Frank Miller	OTHER:
FIELD MANAGER:	OTHER:	OTHER:

ATTACHMENT 1
SAMPLING AND ANALYTICAL REQUIREMENTS

TAL(s)	Method[a]	Matrix	Preserve	Hold Time	TAT[e]	Container[b]	Minimum Mass/Volume
Any combination of Rads/Metals/PCBs/ SVOCs and/or Fluoride (TALs MVT,MDSVA1, MDWTU, MDOTU, MDSXT, MDNWQP, MDNZQP)	Gamma Spec, Alpha Spec, and LSC	Solid	Cool, 4° C	12 months	10 day prelim[e] 30 day final[e]	Glass with Teflon-lined lid	700 g (1500 g)[c]
	ICP/AES or ICP/MS			6 months	10 day[e]		
	GC			14 days	10 day[e]		
	GC			14 days	10 day[e]		
	IC			28 days	10 day[e]		
Rads/Metals (TALs MDY)	Gamma Spec	Solids	Cool, 4° C	12 months	10 day prelim[e] 30 day final[e]	Plastic core liner or glass or polyethylene sample container	300 g (900g)[c]
	ICP/AES or ICP/MS			6 months	10 day[e]		
Rads (TAL M)	Gamma Spec	Solids	None	12 months	10 day prelim[e] 30 day final[e]	Plastic or Stainless Steel core liner or glass or polyethylene sample container	300 g (900 g)[c]
VOCs (TAL I)	GC/MS	Solid	Cool, 4° C	48 hours	10 day[e]	3 x 1-Encore Sampler[c] plus 1 x 2-oz jar for % moisture	Each full Encore Sampler[c] will hold approx. 5 g
Rads (TALs M, MD, MDS, MDN)[d]	Gamma Spec, Alpha Spec, and LSC	Liquid (rinsate[d])	HNO_3 pH<2	6 months	10 day prelim[e] 30 day final[e]	Polyethylene	4 liters
Metals and/or Fluoride (TALs O, V, W, Y, X or Z)[d]	ICP/AES, ICP/MS, or ISE	Liquid (rinsate[d])	HNO_3 pH<2	6 months	10 day[e]	Glass with Teflon lined lid	500 ml
VOCs (TAL I)	GC/MS	Liquid (trip blank only)	H_2SO_4 pH<2 Cool, 4° C	14 days	10 day[e]	3 x 40-ml glass with teflon-lined septa	120 ml (no headspace)

[a] Samples will be analyzed according to ASL D requirements but the minimum detection level may cause some analyses to be considered ASL E.

[b] Sample container types may be changed at the direction of the Field Sampling Lead, as long as the volume requirements, container compatibility requirements, and SCQ requirements are met.

[c] t the direction of the Field Sampling Lead, triple the specified volume must be collected for all samples at one location in the CU in order for the contract laboratory to perform the required quality control analysis. The samples shall be identified on the Chain of Custody/Request for Analysis forms as "designated for laboratory QC".

[d] If "push tubes" are used for sampling, the off-site laboratories will be sent container blanks. If an alternative sample method is used, the Field Technicians will collect a rinsate(s). Rinsate and container blank samples will only be analyzed for rads and metals.

[e] 10-day TAT is required for the final data package and EDD reporting of all non-gamma analyses. For gamma analysis, a preliminary EDD is due on a 10-day TAT; a final data package and EDD is to be reported on a 30-day TAT.

ATTACHMENT 2
TARGET ANALYTE LISTS

20600-PSP-0016-D
(Radiological - ASL D/E*)

Analyte	On-Property FRL[a]	MDL
Technetium-99	29.1 pCi/g	2.91 pCi/g

20600-PSP-0016-I
(VOCs - ASL D/E*)

Analyte	On-Property FRL	MDL
1,1-Dichloroethene	0.41 mg/kg	0.041 mg/kg
Bromodichloromethane	4.0 mg/kg	0.4 mg/kg
Tetrachloroethene	3.6 mg/kg	0.36 mg/kg

20600-PSP-0016-M
(Radiological - ASL D/E*)

Analyte	On-Property FRL	MDL
Total Uranium	82 mg/kg	8.2 mg/kg
Radium-226	1.7 pCi/g	0.17 pCi/g
Radium-228	1.8 pCi/g	0.18 pCi/g
Thorium-228	1.7 pCi/g	0.17 pCi/g
Thorium-232	1.5 pCi/g	0.15 pCi/g

20600-PSP-0016-N
(Radiological – ASL D/E*)

Analyte	On-Property FRL	MDL
Cesium-137	1.4 pCi/g	0.14 pCi/g
Thorium-230	280 pCi/g	28 pCi/g

20600-PSP-0016-O
(Metals – ASL D/E*)

Analyte	On-Property FRL	MDL
Antimony	*10.0 mg/kg*	*1.0 mg/kg*
Arsenic	12 mg/kg	1.2 mg/kg
Beryllium	1.5 mg/kg	0.15 mg/kg
Cadmium	*5.0 mg/kg*	*0.5 mg/kg*
Silver	*10.0 mg/kg*	*1.0 mg/kg*
Fluoride	78000 mg/kg	7800 mg/kg

20600-PSP-0016-P[c]
(PAHs - ASL D/E*)

Analyte	On-Property FRL/*BTV*[b]	MDL
Benzo(a)pyrene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(b)fluoranthene	*1.0 mg/kg*	*0.1 mg/kg*
Dibenzo(a,h)anthracene	*0.088 mg/kg*	*0.0088 mg/kg*
Indeno(1,2,3-cd)pyrene	*1.0 mg/kg*	*0.10 mg/kg*

ATTACHMENT 2
TARGET ANALYTE LISTS
(continued)

20600-PSP-0016-Q
(Pesticides - ASL D/E*)

Analyte	On-Property FRL	MDL
Aroclor-1254	0.13 mg/kg	0.013 mg/kg
Aroclor-1260	0.13 mg/kg	0.013 mg/kg
Dieldrin	0.015 mg/kg	0.0015 mg/kg

20600-PSP-0016-S
(Radiological – ASL D/E*)

Analyte	On-Property FRL	MDL
Thorium-230	280 pCi/g	28 pCi/g

20600-PSP-0016-T
(PCBs - ASL D/E*)

Analyte	On-Property FRL	MDL
Aroclor-1254	0.13 mg/kg	0.013 mg/kg
Aroclor-1260	0.13 mg/kg	0.013 mg/kg

20600-PSP-0016-U[c]
(PAHs - ASL D/E*)

Analyte	On-Property FRL/*BTV*[b]	MDL
Benzo(a)anthracene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(a)pyrene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(b)fluoranthene	*1.0 mg/kg*	*0.1 mg/kg*
Dibenzo(a,h)anthracene	*0.088 mg/kg*	*0.0088 mg/kg*
Indeno(1,2,3-cd)pyrene	*1.0 mg/kg*	*0.10 mg/kg*
Carbazole	12 mg/kg	1.2 mg/kg

20600-PSP-0016-V
(Metals - ASL D/E*)

Analyte	On-Property FRL/*BTV*[b]	MDL
Arsenic	12 mg/kg	1.2 mg/kg
Beryllium	1.5 mg/kg	0.15 mg/kg

20600-PSP-0016-W
(Metals - ASL D/E*)

Analyte	On-Property FRL/*BTV*[b]	MDL
Antimony	*10.0 mg/kg*	*1.0 mg/kg*
Arsenic	12 mg/kg	1.2 mg/kg
Beryllium	1.5 mg/kg	0.15 mg/kg
Silver	*10.0 mg/kg*	*1.0 mg/kg*
Fluoride	78000 mg/kg	7800 mg/kg

ATTACHMENT 2
TARGET ANALYTE LISTS
(continued)

20600-PSP-0016-X
(Metals - ASL D/E*)

Analyte	On-Property FRL/*BTV*[b]	MDL
Antimony	*10.0 mg/kg*	*1.0 mg/kg*
Cadmium	*5.0 mg/kg*	*0.5 mg/kg*

20600-PSP-0016-Y
(Metals - ASL D/E*)

Analyte	On-Property FRL/*BTV*[b]	MDL
Antimony	*10.0 mg/kg*	*1.0 mg/kg*
Beryllium	1.5 mg/kg	0.15 mg/kg

20600-PSP-0016-Z
(Metals - ASL D/E*)

Analyte	On-Property FRL/*BTV*[b]	MDL
Antimony	*10.0 mg/kg*	*1.0 mg/kg*
Arsenic	12 mg/kg	1.2 mg/kg
Beryllium	1.5 mg/kg	0.15 mg/kg
Fluoride	78000 mg/kg	7800 mg/kg

20600-PSP-0016-A1[c]
(PAHs - ASL D/E*)

Analyte	On-Property FRL/*BTV*[b]	MDL
Benzo(a)anthracene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(a)pyrene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(b)fluoranthene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(g,h,i)perylene	*1.0 mg/kg*	*0.1 mg/kg*
Benzo(k)fluoranthene	*1.0 mg/kg*	*0.1 mg/kg*
Chrysene	*1.0 mg/kg*	*0.1 mg/kg*
Dibenzo(a,h)anthracene	*0.088 mg/kg*	*0.0088 mg/kg*
Fluoranthene	*10.0 mg/kg*	*1.0 mg/kg*
Indeno(1,2,3-cd)pyrene	*1.0 mg/kg*	*0.10 mg/kg*
Phenanthrene	*5.0 mg/kg*	*0.5 mg/kg*
Pyrene	*10.0 mg/kg*	*1.0 mg/kg*

[a]The MDL for technetium-99 is 10 percent of the WAC limit, which is lower than the FRL.

[b]BTV applies to Ecological COCs.

[c]The MDLs for TALs P, U, and A1 are 10 percent of the BTV, which is lower than the FRLs.

*Analytical requirements will meet ASL D but the MDL may cause some analyses to be considered ASL E.

ATTACHMENT 3
SITEWIDE RAIL LINE SYSTEM SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL (Analysis)	Northing	Easting
1	C01-1	0-0.5	RLS-C01-1^F-RMP	MVT	482420.56	1349602.08
		1-1.5	RLS-C01-1^N-3-RMP	MVT		
	C01-2	0-0.5	RLS-C01-2^RMP	MVT	482420.28	1349654.87
	C01-3	0-0.5	RLS-C01-3^RMP	MVT	482447.9	1349721.36
	C01-4V	0-0.5	RLS-C01-4V	Archive	482416.08	1349782.79
	C01-5	0-0.5	RLS-C01-5^RMP	MVT	482441.61	1349871.89
	C01-6V	0-0.5	RLS-C01-6V	Archive	482410.78	1349911.14
	C01-7	0-0.5	RLS-C01-7^RMP	MVT	482423.19	1349958.5
	C01-8D	0-0.5	RLS-C01-8^RMP	MVT	482421.73	1350023.47
			RLS-C01-8^RMP-D	MVT		
	C01-9V	0-0.5	RLS-C01-9V	Archive	482405.24	1350079.1
	C01-10	0-0.5	RLS-C01-10^RMP	MVT	482430.82	1350176.3
	C01-11	0-0.5	RLS-C01-11^RMP	MVT	482414.73	1350234.01
	C01-12	0-0.5	RLS-C01-12^RMP	MVT	482397.28	1350291.08
	C01-13	0-0.5	RLS-C01-13^RMP	MVT	482430.64	1350390.04
	C01-14V	0-0.5	RLS-C01-14V	Archive	482407.28	1350434.52
	C01-15	0-0.5	RLS-C01-15^RMP	MVT	482390.68	1350518.28
	C01-16	0-0.5	RLS-C01-16^RMP	MVT	482396.82	1350581.93

ATTACHMENT 3
SITEWIDE RAIL LINE SYSTEM SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL (Analysis)	Northing	Easting
2	C02-1	0-0.5	RLS-C02-1^F-RMP	MVT	482379.62	1349598.78
		1.5-2.0	RLS-C02-1^N-4-RMP	MVT		
	C02-2	0-0.5	RLS-C02-2^F-RMP	MVT	482364.24	1349630.44
		1.5-2.0	RLS-C02-2^N-4-RMP	MVT		
	C02-3V	0-0.5	RLS-C02-3V (fill)	Archive	482389.63	1349715.7
		0.5-1.0	RLS-C02-3V (native)	Archive		
	C02-4	0-0.5	RLS-C02-4^RMP	MVT	482388.54	1349762.51
	C02-5D	0-0.5	RLS-C02-5^RMP	MVT	482357.43	1349830
			RLS-C02-5^RMP-D	MVT		
	C02-6	0-0.5	RLS-C02-6^RMP	MVT	482355.89	1349898.44
	C02-7V	0-0.5	RLS-C02-7V	Archive	482352.66	1349969.73
	C02-8	0-0.5	RLS-C02-8^RMP	MVT	482365.05	1350029.54
	C02-9	0-0.5	RLS-C02-9^RMP	MVT	482377.22	1350083.14
	C02-10	0-0.5	RLS-C02-10^RMP	MVT	482346.75	1350143.86
	C02-11V	0-0.5	RLS-C02-11V	Archive	482357.02	1350250.91
	C02-12	0-0.5	RLS-C02-12^RMP	MVT	482383.04	1350295.29
	C02-13	0-0.5	RLS-C02-13^RMP	MVT	482338.52	1350379.07
	C02-14	0-0.5	RLS-C02-14^RMP	MVT	482337.02	1350431.75
	C02-15	0-0.5	RLS-C02-15^RMP	MVT	482363.81	1350478.39
	C02-16V	0-0.5	RLS-C02-16V	Archive	482347.1	1350551.98

ATTACHMENT 3
SITEWIDE RAIL LINE SYSTEM SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL (Analysis)	Northing	Easting
3	C03-1	0-0.5	RLS-C03-1^F-RMP	MVT	482310.92	1349593.05
		0.5-1.0	RLS-C03-1^N-2-RMP	MVT		
	C03-2	0-0.5	RLS-C03-2^F-RMP	MVT	482296.75	1349628.47
		0.5-1.0	RLS-C03-2^N-2-RMP	MVT		
	C03-3	0-0.5	RLS-C03-3^F-RMP	MVT	482333.25	1349731.17
		0.5-1.0	RLS-C03-3^N-2-RMP	MVT		
	C03-4V	0-0.5	RLS-C03-4V	Archive	482303.5	1349760.37
	C03-5	0-0.5	RLS-C03-5^RMP	MVT	482315.89	1349847.53
	C03-6D	0-0.5	RLS-C03-6^RMP	MVT	482326.85	1349921.83
			RLS-C03-6^RMP-D	MVT		
	C03-7	0-0.5	RLS-C03-7^RMP	MVT	482297.45	1349966.01
	C03-8V	0-0.5	RLS-C03-8V	Archive	482322.04	1350052.29
	C03-9	0-0.5	RLS-C03-9^RMP	MVT	482320.52	1350107.93
	C03-10	0-0.5	RLS-C03-10^RMP	MVT	482303.47	1350176.59
	C03-11	0-0.5	RLS-C03-11^RMP	MVT	482287.63	1350229.43
	C03-12V	0-0.5	RLS-C03-12V	Archive	482299.1	1350304.19
	C03-13	0-0.5	RLS-C03-13^RMP	MVT	482269.47	1350389.95
	C03-14	0-0.5	RLS-C03-14^RMP	MVT	482281.08	1350434.9
	C03-15V	0-0.5	RLS-C03-15V	Archive	482305.95	1350508.64
	C03-16	0-0.5	RLS-C03-16^RMP	MVT	482290.65	1350563.39

ATTACHMENT 3
SITEWIDE RAIL LINE SYSTEM SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL (Analysis)	Northing	Easting
4	C04-1	0-0.5	RLS-C04-1^RMS	MDSVA1	482449.04	1349306.03
			RLS-C04-1^L	I		
	C04-2V	0-0.5	RLS-C04-2V	Archive	482432.12	1349367.47
	C04-3	0-0.5	RLS-C04-3^F-RMS	MDSVA1	482407.44	1349266.93
			RLS-C04-3^F-L	I		
		2.5-3.0	RLS-C04-3^N-6-RMS	MDSVA1		
			RLS-C04-3^N-6-L	I		
	C04-4	0-0.5	RLS-C04-4^F-RMS	MDSVA1	482410.48	1349338.23
			RLS-C04-4^F-L	I		
		2.5-3.0	RLS-C04-4^N-6-RMS	MDSVA1		
			RLS-C04-4^N-6-L	I		
	C04-5	0-0.5	RLS-C04-5^RMS	MDSVA1	482443.55	1349423.29
			RLS-C04-5^L	I		
	C04-6V	0-0.5	RLS-C04-6V (fill)	Archive	482426.72	1349504.97
		1.0-1.5	RLS-C04-6V (native)			
	C04-7	0-0.5	RLS-C04-7^F-RMS	MDSVA1	482418.77	1349430.22
			RLS-C04-7^F-L	I		
		1.0-1.5	RLS-C04-7^N-3-RMS	MDSVA1		
			RLS-C04-7^N-3-L	I		
	C04-8	0-0.5	RLS-C04-8^F-RMS	MDSVA1	482397.37	1349503.97
			RLS-C04-8^F-L	I		
		1.5-2.0	RLS-C04-8^N-4-RMS	MDSVA1		
			RLS-C04-8^N-4-L	I		
	C04-9D	0-0.5	RLS-C04-9^F-RMS	MDSVA1	482376.63	1349288.74
		0-0.5	RLS-C04-9^F-L	I		
		0-0.5	RLS-C04-9^F-RMS-D	MDSVA1		
		0-0.5	RLS-C04-9^F-L-D	I		
		2.5-3.0	RLS-C04-9^N-6-RMS	MDSVA1		
		2.5-3.0	RLS-C04-9^N-6-L	I		
		2.5-3.0	RLS-C04-9^N-6-RMS-D	MDSVA1		
		2.5-3.0	RLS-C04-9^N-6-L-D	I		
	C04-10	0-0.5	RLS-C04-10^F-RMS	MDSVA1	482360.38	1349343.11
		0-0.5	RLS-C04-10^F-L	I		
		2.5-3.0	RLS-C04-10^N-6-RMS	MDSVA1		
		2.5-3.0	RLS-C04-10^N-6-L	I		
	C04-11	0-0.5	RLS-C04-11^F-RMS	MDSVA1	482341.97	1349306.07
			RLS-C04-11^F-L	I		
		2.0-2.5	RLS-C04-12^N-5-RMS	MDSVA1		
			RLS-C04-12^N-5-L	I		
	C04-12	0-0.5	RLS-C04-12^F-RMS	MDSVA1	482371.8	1349428.42
			RLS-C04-12^F-L	I		
		1.5-2.0	RLS-C04-12^N-3-RMS	MDSVA1		
			RLS-C04-12^N-3-L	I		
	C04-13V	0-0.5	RLS-C04-13V (fill)	Archive	482367.66	1349528.35
		1.5-2.0	RLS-C04-13V (native)			
	C04-14	0-0.5	RLS-C04-14^F-RMS	MDSVA1	482323.98	1349427.24
			RLS-C04-14^F-L	I		
		2-2.5	RLS-C04-14^N-5-RMS	MDSVA1		
			RLS-C04-14^N-5-L	I		
	C04-15	0-0.5	RLS-C04-15^F-RMS	MDSVA1	482342.9	1349469.19
			RLS-C04-15^F-L	I		
		2-2.5	RLS-C04-15^N-5-RMS	MDSVA1		
			RLS-C04-15^N-5-L	I		
	C04-16	0-0.5	RLS-C04-16^F-RMS	MDSVA1	482327.16	1349504.04
			RLS-C04-16^F-L	I		
		1-1.5	RLS-C04-16^N-3-RMS	MDSVA1		
			RLS-C04-16^N-3-L	I		

ATTACHMENT 3
SITEWIDE RAIL LINE SYSTEM SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL (Analysis)	Northing	Easting
5	C05-1	0-0.5	RLS-C05-1^RMS	MDSVA1	482519.46	1349177.55
			RLS-C05-1^L	I		
	C05-2	0-0.5	RLS-C05-2^RMS	MDSVA1	482479.79	1349077.67
			RLS-C05-2^L	I		
	C05-3V	0-0.5	RLS-C05-3V	Archive	482472.66	1349135.09
	C05-4	0-0.5	RLS-C05-4^RMS	MDSVA1	482477.5	1349194.43
			RLS-C05-4^L	I		
	C05-5	0-0.5	RLS-C05-5^RMS	MDSVA1	482451.48	1348985.25
			RLS-C05-5^L	I		
	C05-6V	0-0.5	RLS-C05-6V	Archive	482429.66	1349021.84
	C05-7	0-0.5	RLS-C05-7^RMS	MDSVA1	482373.66	1348941.36
			RLS-C05-7^L	I		
	C05-8	0-0.5	RLS-C05-8^RMS	MDSVA1	482387.88	1349001.94
			RLS-C05-8^L	I		
	C05-9	0-0.5	RLS-C05-9^RMS	MDSVA1	482430.28	1349064.82
			RLS-C05-9^L	I		
	C05-10	0-0.5	RLS-C05-10^RMS	MDSVA1	482419.49	1349127.49
			RLS-C05-10^L	I		
	C05-11	0-0.5	RLS-C05-11^F-RMS	MDSVA1	482385.07	1349053.52
			RLS-C05-11^F-L	I		
		3.0-3.5	RLS-C05-11^N-7-RMS	MDSVA1		
			RLS-C05-11^N-7-L	I		
	C05-12V	0-0.5	RLS-C05-12V (fill)	Archive	482362.6	1349143.66
		3.0-3.5	RLS-C05-12V (native)			
	C05-13	0-0.5	RLS-C05-13^RMS	MDSVA1	482434.54	1349183.84
			RLS-C05-13^L	I		
	C05-14D	0-0.5	RLS-C05-14^RMS	MDSVA1	482433.64	1349235.07
			RLS-C05-14^L	I		
			RLS-C05-14^RMS-D	MDSVA1		
			RLS-C05-14^L-D	I		
	C05-15	0-0.5	RLS-C05-15^F-RMS	MDSVA1	482379.32	1349195.95
			RLS-C05-15^F-L	I		
		3.0-3.5	RLS-C05-15^N-7-RMS	MDSVA1		
			RLS-C05-15^N-7-L	I		
	C05-16V	0-0.5	RLS-C05-16V (fill)	Archive	482374.06	1349233.46
		2.5-3.0	RLS-C05-16V (native)			

ATTACHMENT 3
SITEWIDE RAIL LINE SYSTEM SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL (Analysis)	Northing	Easting
6	C06-1D	0-0.5	RLS-C06-1^RMPS	MDWTU	482396.08	1348303.17
			RLS-C06-1^RMPS-D	MDWTU		
	C06-2	0-0.5	RLS-C06-2^RMPS	MDWTU	482412.3	1348449.08
	C06-3	0-0.5	RLS-C06-3^RMPS	MDWTU	482397.2	1348508.16
	C06-4V	0-0.5	RLS-C06-4V	Archive	482389.69	1348621.13
	C06-5	0-0.5	RLS-C06-5^RMPS	MDWTU	482390.11	1348741.58
	C06-6V	0-0.5	RLS-C06-6V	Archive	482390.18	1348825.05
	C06-7	0-0.5	RLS-C06-7^RMPS	MDWTU	482374.44	1348865.62
	C06-8	0-0.5	RLS-C06-8^RMPS	MDWTU	482334.97	1348689.15
	C06-9	0-0.5	RLS-C06-9^RMPS	MDWTU	482307.51	1348630.28
	C06-10V	0-0.5	RLS-C06-10V	Archive	482258.94	1348564.81
	C06-11	0-0.5	RLS-C06-11^RMPS	MDWTU	482161.25	1348468.77
	C06-12	0-0.5	RLS-C06-12^RMPS	MDWTU	482088	1348355.08
	C06-13	0-0.5	RLS-C06-13^RMPS	MDWTU	482042.72	1348288.8
	C06-14V	0-0.5	RLS-C06-14V	Archive	481987.3	1348218.51
	C06-15	0-0.5	RLS-C06-15^RMPS	MDWTU	481901.83	1348163.04
	C06-16	0-0.5	RLS-C06-16^RMPS	MDWTU	481818.42	1348113.64

ATTACHMENT 3
SITEWIDE RAIL LINE SYSTEM SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL (Analysis)	Northing	Easting
7	C07-1V	0-0.5	RLS-C07-1V	Archive	481716.31	1348054.31
	C07-2	0-0.5	RLS-C07-2^RMPS	MDOTU	481775.39	1348062.64
	C07-3	0-0.5	RLS-C07-3^RMPS	MDOTU	481853.54	1348043.74
	C07-4	0-0.5	RLS-C07-4^RMPS	MDOTU	481932.56	1348000.7
	C07-5V	0-0.5	RLS-C07-5V	Archive	482037.36	1347955.8
	C07-6	0-0.5	RLS-C07-6^RMPS	MDOTU	482062.51	1347903.74
	C07-7	0-0.5	RLS-C07-7^RMPS	MDOTU	482124.2	1347826.32
	C07-8	0-0.5	RLS-C07-8^RMPS	MDOTU	482169.43	1347693.62
	C07-9	0-0.5	RLS-C07-9^RMPS	MDOTU	482194.06	1347613.13
	C07-10V	0-0.5	RLS-C07-10V	Archive	482194.35	1347712.21
	C07-11D	0-0.5	RLS-C07-11^RMPS	MDOTU	482231.69	1347825.4
			RLS-C07-11^RMPS-D	MDOTU		
	C07-12	0-0.5	RLS-C07-12^RMPS	MDOTU	482244.98	1347896.24
	C07-13V	0-0.5	RLS-C07-13V	Archive	482279.87	1347944.71
	C07-14	0-0.5	RLS-C07-14^RMPS	MDOTU	482353.79	1348052.38
	C07-15	0-0.5	RLS-C07-15^RMPS	MDOTU	482377.17	1348113.77
	C07-16	0-0.5	RLS-C07-16^RMPS	MDOTU	482402.4	1348242.74

ATTACHMENT 3
SITEWIDE RAIL LINE SYSTEM SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL (Analysis)	Northing	Easting
8	C08-1	0-0.5	RLS-C08-1^RMP	MDSXT	481635.14	1348054.05
	C08-2	0-0.5	RLS-C08-2^RMP	MDSXT	481531.44	1348054.4
	C08-3V	0-0.5	RLS-C08-3V	Archive	481405.85	1348049.42
	C08-4	0-0.5	RLS-C08-4^RMP	MDSXT	481352.45	1348044.21
	C08-5D	0-0.5	RLS-C08-5^RMP	MDSXT	481289.74	1348021.51
			RLS-C08-5^RMP-D	MDSXT		
	C08-6	0-0.5	RLS-C08-6^RMP	MDSXT	481244.28	1348083.32
	C08-7	0-0.5	RLS-C08-7^RMP	MDSXT	481202.11	1348031
	C08-8V	0-0.5	RLS-C08-8V	Archive	481167.4	1348054.67
	C08-9	0-0.5	RLS-C08-9^RMP	MDSXT	481122.11	1348051.84
	C08-10	0-0.5	RLS-C08-10^RMP	MDSXT	481085.61	1348066.88
	C08-11V	0-0.5	RLS-C08-11V	Archive	481051.96	1348024.58
	C08-12	0-0.5	RLS-C08-12^RMP	MDSXT	481010.2	1348050.77
	C08-13V	0-0.5	RLS-C08-13V	Archive	480958.4	1348059.84
	C08-14	0-0.5	RLS-C08-14^RMP	MDSXT	480920.89	1348012.47
	C08-15	0-0.5	RLS-C08-15^RMP	MDSXT	480861.27	1348039.21
	C08-16	0-0.5	RLS-C08-16^RMP	MDSXT	480804.58	1348025.87

ATTACHMENT 3
SITEWIDE RAIL LINE SYSTEM SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL (Analysis)	Northing	Easting
9	C09-1	0-0.5	RLS-C09-1^RM	MDY	480748.5	1348041.95
	C09-2	0-0.5	RLS-C09-2^RM	MDY	480661.83	1348018.35
	C09-3	0-0.5	RLS-C09-3^RM	MDY	480589.14	1348029.04
	C09-4V	0-0.5	RLS-C09-4V	Archive	480522.11	1347984.92
	C09-5	0-0.5	RLS-C09-5^RM	MDY	480486.61	1348019.74
	C09-6	0-0.5	RLS-C09-6^RM	MDY	480438.4	1348003.77
	C09-7V	0-0.5	RLS-C09-7V	Archive	480398.59	1347968.75
	C09-8	0-0.5	RLS-C09-8^RM	MDY	480365.44	1347939.82
	C09-9	0-0.5	RLS-C09-9^RM	MDY	480380.83	1347907.5
	C09-10V	0-0.5	RLS-C09-10^V	Archive	480315.17	1347866.66
	C09-11	0-0.5	RLS-C09-11^RM	MDY	480314.97	1347823.08
	C09-12	0-0.5	RLS-C09-12^RM	MDY	480344.78	1347771.98
	C09-13D	0-0.5	RLS-C09-13^RM	MDY	480309.97	1347744.26
			RLS-C09-13^RM-D	MDY		
	C09-14	0-0.5	RLS-C09-14^RM	MDY	480309.63	1347667.92
	C09-15V	0-0.5	RLS-C09-15V	Archive	480345.58	1347585.65
	C09-16	0-0.5	RLS-C09-16^RM	MDY	480338.91	1347627.29

ATTACHMENT 3
SITEWIDE RAIL LINE SYSTEM SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL (Analysis)	Northing	Easting
10	C10-1	0-0.5	RLS-C10-1^RMPS	MDNWQP	482484.67	1346523.84
			RLS-C10-1^L	I		
	C10-2	0-0.5	RLS-C10-2^RMPS	MDNWQP	482483.14	1346580.7
			RLS-C10-2^L	I		
	C10-3	0-0.5	RLS-C10-3^RMPS	MDNWQP	482449.38	1346641.85
			RLS-C10-3^L	I		
	C10-4V	0-0.5	RLS-C10-4V	Archive	482455.65	1346695.97
	C10-5	0-0.5	RLS-C10-5^RMPS	MDNWQP	482412.99	1346785.54
			RLS-C10-5^L	I		
	C10-6V	0-0.5	RLS-C10-6V	Archive	482387.85	1346837.9
	C10-7	0-0.5	RLS-C10-7^RMPS	MDNWQP	482397.8	1346922.85
			RLS-C10-7^L	I		
	C10-8	0-0.5	RLS-C10-8^RMPS	MDNWQP	482351.77	1347001.07
			RLS-C10-8^L	I		
	C10-9	0-0.5	RLS-C10-9^RMPS	MDNWQP	482332.29	1347045.51
			RLS-C10-9^L	I		
	C10-10V	0-0.5	RLS-C10-10V	Archive	482348.2	1347092.43
	C10-11	0-0.5	RLS-C10-11^RMPS	MDNWQP	482338.37	1347162.01
			RLS-C10-11^L	I		
	C10-12D	0-0.5	RLS-C10-12^RMPS	MDNWQP	482306.33	1347215.46
			RLS-C10-12^L	I		
			RLS-C10-12^RMPS-D	MDNWQP		
			RLS-C10-12^L-D	I		
	C10-13	0-0.5	RLS-C10-13^RMPS	MDNWQP	482286.27	1347317.04
			RLS-C10-13^L	I		
	C10-14	0-0.5	RLS-C10-14^RMPS	MDNWQP	482248.63	1347384.31
			RLS-C10-14^L	I		
	C10-15V	0-0.5	RLS-C10-15V	Archive	482236.73	1347460.3
	C10-16	0-0.5	RLS-C10-16^RMPS	MDNWQP	482206.26	1347537.81
			RLS-C10-16^L	I		

ATTACHMENT 3
SITEWIDE RAIL LINE SYSTEM SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL (Analysis)	Northing	Easting
11	C11-1D	0-0.5	RLS-C11-1^RMPS	MDNZQP	482661.1	1345898.04
			RLS-C11-1^L	I		
			RLS-C11-1^RMPS-D	MDNZQP		
			RLS-C11-1^L-D	I		
	C11-2V	0-0.5	RLS-C11-2V	Archive	482636.18	1345948.89
	C11-3	0-0.5	RLS-C11-3^RMPS	MDNZQP	482639.07	1345991.47
			RLS-C11-3^L	I		
	C11-4	0-0.5	RLS-C11-4^RMPS	MDNZQP	482620.27	1346026.66
			RLS-C11-4^L	I		
	C11-5V	0-0.5	RLS-C11-5V	Archive	482597.54	1346072.74
	C11-6	0-0.5	RLS-C11-6^RMPS	MDNZQP	482604.86	1346104.12
			RLS-C11-6^L	I		
	C11-7	0-0.5	RLS-C11-7^RMPS	MDNZQP	482586.57	1346141.37
			RLS-C11-7^L	I		
	C11-8	0-0.5	RLS-C11-8^RMPS	MDNZQP	482568.62	1346175.56
			RLS-C11-8^L	I		
	C11-9	0-0.5	RLS-C11-9^RMPS	MDNZQP	482578.83	1346219.44
			RLS-C11-9^L	I		
	C11-10V	0-0.5	RLS-C11-10V	Archive	482561.51	1346259.01
	C11-11	0-0.5	RLS-C11-11^RMPS	MDNZQP	482535.81	1346307.06
			RLS-C11-11^L	I		
	C11-12	0-0.5	RLS-C11-12^RMPS	MDNZQP	482530.18	1346333.58
			RLS-C11-12^L	I		
	C11-13	0-0.5	RLS-C11-13^RMPS	MDNZQP	482539.89	1346376.3
			RLS-C11-13^L	I		
	C11-14	0-0.5	RLS-C11-14^RMPS	MDNZQP	482514.29	1346391.84
			RLS-C11-14^L	I		
	C11-15V	0-0.5	RLS-C11-15V	Archive	482529.37	1346434.72
	C11-16	0-0.5	RLS-C11-16^RMPS	MDNZQP	482505.37	1346446.86
			RLS-C11-16^L	I		

ATTACHMENT 3
SITEWIDE RAIL LINE SYSTEM SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL (Analysis)	Northing	Easting
12	C12-1	0-0.5	RLS-C12-1^R	M	482776.64	1345570.49
	C12-2V	0-0.5	RLS-C12-2V	Archive	482762.51	1345648.14
	C12-3	0-0.5	RLS-C12-3^R	M	482745.87	1345569.34
	C12-4	0-0.5	RLS-C12-4^R	M	482713.27	1345621.68
	C12-5	0-0.5	RLS-C12-5^R	M	482749.13	1345681.62
	C12-6	0-0.5	RLS-C12-6^R	M	482726.55	1345737.34
	C12-7V	0-0.5	RLS-C12-7V	Archive	482708.44	1345675.12
	C12-8D	0-0.5	RLS-C12-8^R-D	M	482693.14	1345755.3
			RLS-C12-8^R-D	M		
	C12-9	0-0.5	RLS-C12-9^R	M	482762.06	1345757.84
	C12-10V	0-0.5	RLS-C12-10V	Archive	482709.16	1345787.56
	C12-11	0-0.5	RLS-C12-11^R	M	482749.9	1345847.89
	C12-12	0-0.5	RLS-C12-12^R	M	482701.64	1345830.77
	C12-13	0-0.5	RLS-C12-13^R	M	482740.76	1345897.89
	C12-14	0-0.5	RLS-C12-14^R	M	482686.45	1345864.23
	C12-15V	0-0.5	RLS-C12-15V	Archive	482673.87	1345773.78
	C12-16	0-0.5	RLS-C12-16^R	M	482652.05	1345848.08

ATTACHMENT 3
SITEWIDE RAIL LINE SYSTEM SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL (Analysis)	Northing	Easting
13	C13-1V	0-0.5	RLS-C13-1V	Archive	482906.25	1345136.47
	C13-2	0-0.5	RLS-C13-2^R	M	482881.77	1345204.08
	C13-3	0-0.5	RLS-C13-3^R	M	482870.13	1345143.05
	C13-4D	0-0.5	RLS-C13-4^R	M	482838.73	1345161.07
			RLS-C13-4^R-D	M		
	C13-5	0-0.5	RLS-C13-5^R	M	482859.54	1345264.1
	C13-6	0-0.5	RLS-C13-6^R	M	482857.43	1345320.95
	C13-7	0-0.5	RLS-C13-7^R	M	482828.88	1345202.8
	C13-8V	0-0.5	RLS-C13-8V	Archive	482828.42	1345273.81
	C13-9V	0-0.5	RLS-C13-9V	Archive	482833.21	1345349.37
	C13-10	0-0.5	RLS-C13-10^R	M	482792.26	1345351.5
	C13-11	0-0.5	RLS-C13-11^R	M	482825.25	1345433.6
	C13-12	0-0.5	RLS-C13-12^R	M	482756.81	1345429.25
	C13-13	0-0.5	RLS-C13-13^R	M	482796.94	1345486.44
	C13-14	0-0.5	RLS-C13-14^R	M	482800.99	1345533.15
	C13-15V	0-0.5	RLS-C13-15V	Archive	482763.47	1345467.87
	C13-16	0-0.5	RLS-C13-16^R	M	482743.65	1345511.93

ATTACHMENT 3
SITEWIDE RAIL LINE SYSTEM SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL (Analysis)	Northing	Easting
14	C14-1V	0-0.5	RLS-C14-1V	Archive	483045.33	1344680.88
	C14-2	0-0.5	RLS-C14-2^R	M	483042.66	1344724.73
	C14-3	0-0.5	RLS-C14-3^R	M	482996.22	1344658.87
	C14-4	0-0.5	RLS-C14-4^R	M	482984.62	1344760.62
	C14-5	0-0.5	RLS-C14-5 ^R	M	483023.56	1344791.1
	C14-6	0-0.5	RLS-C14-6^R	M	483003.42	1344836.84
	C14-7V	0-0.5	RLS-C14-7V	Archive	482942.6	1344795.68
	C14-8	0-0.5	RLS-C14-8^R	M	482967.77	1344861.88
	C14-9V	0-0.5	RLS-C14-9V	Archive	482970.76	1344910.96
	C14-10	0-0.5	RLS-C14-10^R	M	482977.95	1344965.74
	C14-11D	0-0.5	RLS-C14-11^R	M	482918.26	1344896.08
			RLS-C14-11^R-D	M		
	C14-12	0-0.5	RLS-C14-12^R	M	482935.63	1344985.66
	C14-13	0-0.5	RLS-C14-13^R	M	482960.17	1345040.82
	C14-14V	0-0.5	RLS-C14-14V	Archive	482935.36	1345088.98
	C14-15	0-0.5	RLS-C14-15^R	M	482891.45	1345038.99
	C14-16	0-0.5	RLS-C14-16^R	M	482899.16	1345080.45

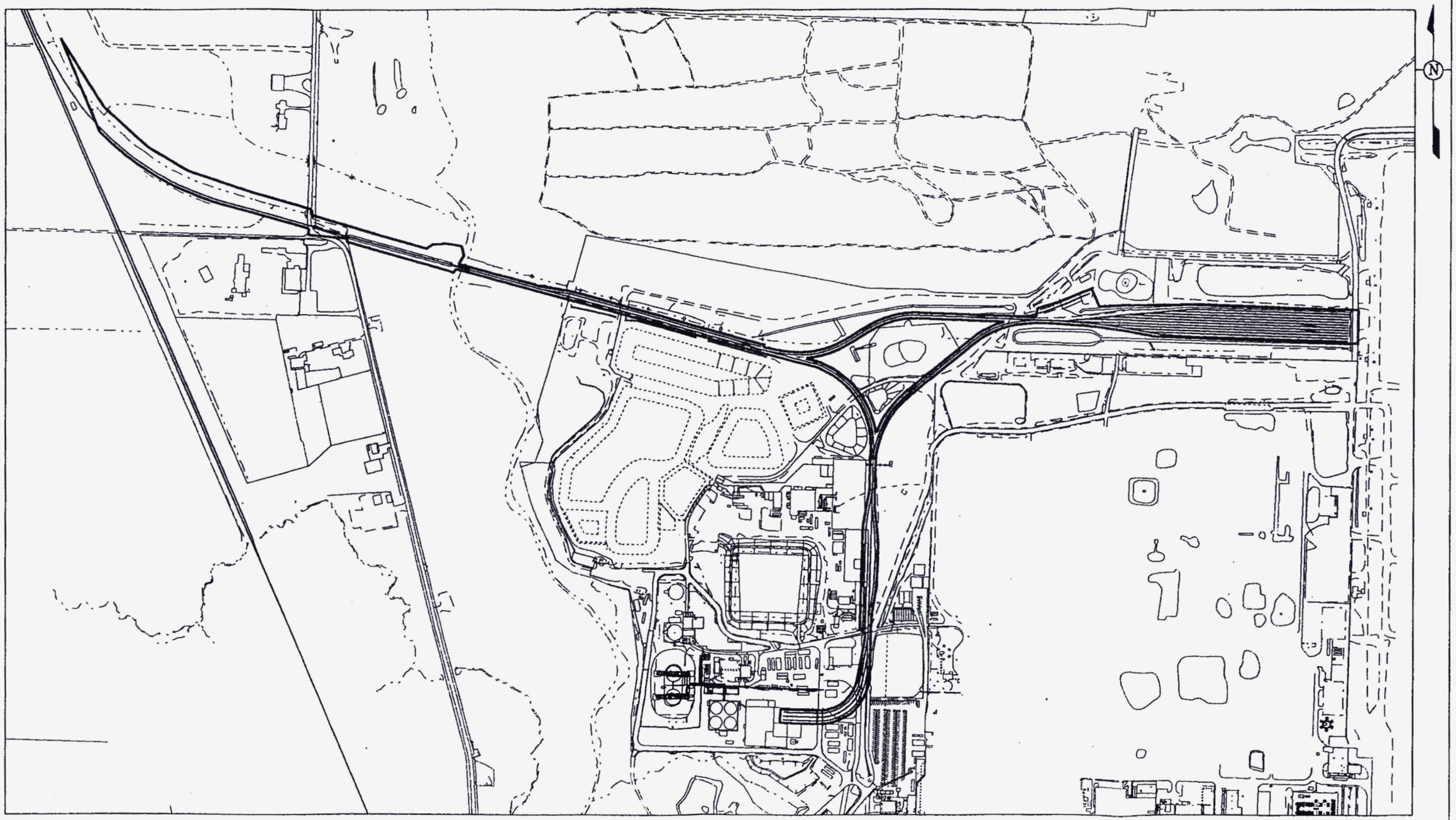
ATTACHMENT 3
SITEWIDE RAIL LINE SYSTEM SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL (Analysis)	Northing	Easting
15	C15-1	0-0.5	RLS-C15-1^R	M	483233.93	1344271.2
	C15-2	0-0.5	RLS-C15-2^R	M	483216.47	1344319.39
	C15-3V	0-0.5	RLS-C15-3V	Archive	483187.9	1344264.09
	C15-4D	0-0.5	RLS-C15-4^R-D	M	483126.57	1344320.08
			RLS-C15-4^R-D	M		
	C15-5	0-0.5	RLS-C15-5^R	M	483194.38	1344357.1
	C15-6	0-0.5	RLS-C15-6^R	M	483143.12	1344400.27
	C15-7	0-0.5	RLS-C15-7^R	M	483118.85	1344363.48
	C15-8V	0-0.5	RLS-C15-8V	Archive	483088.46	1344419.67
	C15-9	0-0.5	RLS-C15-9^R	M	483127.71	1344442.73
	C15-10	0-0.5	RLS-C15-10^R	M	483095.66	1344506.84
	C15-11	0-0.5	RLS-C15-11^R	M	483056.92	1344489.21
	C15-12V	0-0.5	RLS-C15-12V	Archive	483044.68	1344526.86
	C15-13	0-0.5	RLS-C15-13^R	M	483100.34	1344572.52
	C15-14V	0-0.5	RLS-C15-14V	Archive	483081.43	1344641.46
	C15-15	0-0.5	RLS-C15-15^R	M	483036.49	1344582.9
	C15-16	0-0.5	RLS-C15-16^R	M	483001.61	1344636.94

ATTACHMENT 3
SITEWIDE RAIL LINE SYSTEM SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL (Analysis)	Northing	Easting
16	C16-1	0-0.5	RLS-C16-1^R	M	483721.31	1343871.21
	C16-2	0-0.5	RLS-C16-2^R	M	483624.32	1343918.12
	C16-3	0-0.5	RLS-C16-3^R	M	483555.76	1343981.23
	C16-4V	0-0.5	RLS-C16-4V	Archive	483511.25	1343968
	C16-5	0-0.5	RLS-C16-5^R	M	483484.4	1344032.46
	C16-6	0-0.5	RLS-C16-6^R	M	483452.75	1344018.13
	C16-7V	0-0.5	RLS-C16-7V	Archive	483395.42	1344039.42
	C16-8	0-0.5	RLS-C16-8^R	M	483416.18	1344100.86
	C16-9	0-0.5	RLS-C16-9^R	M	483371.28	1344069.52
	C16-10V	0-0.5	RLS-C16-10V	Archive	483343.23	1344106.43
	C16-11	0-0.5	RLS-C16-11^R	M	483343.83	1344169.86
	C16-12	0-0.5	RLS-C16-12^R	M	483306.66	1344085.39
	C16-13	0-0.5	RLS-C16-13^R	M	483275.27	1344149.35
	C16-14D	0-0.5	RLS-C16-14^R	M	483295.42	1344215.48
			RLS-C16-14^R-D	M		
	C16-15	0-0.5	RLS-C16-15^R	M	483249.03	1344198.61
	C16-16V	0-0.5	RLS-C16-16V	Archive	483205.47	1344206.85

006402



LEGEND:

SCALE

500 250 0 500 FEET

DRAFT

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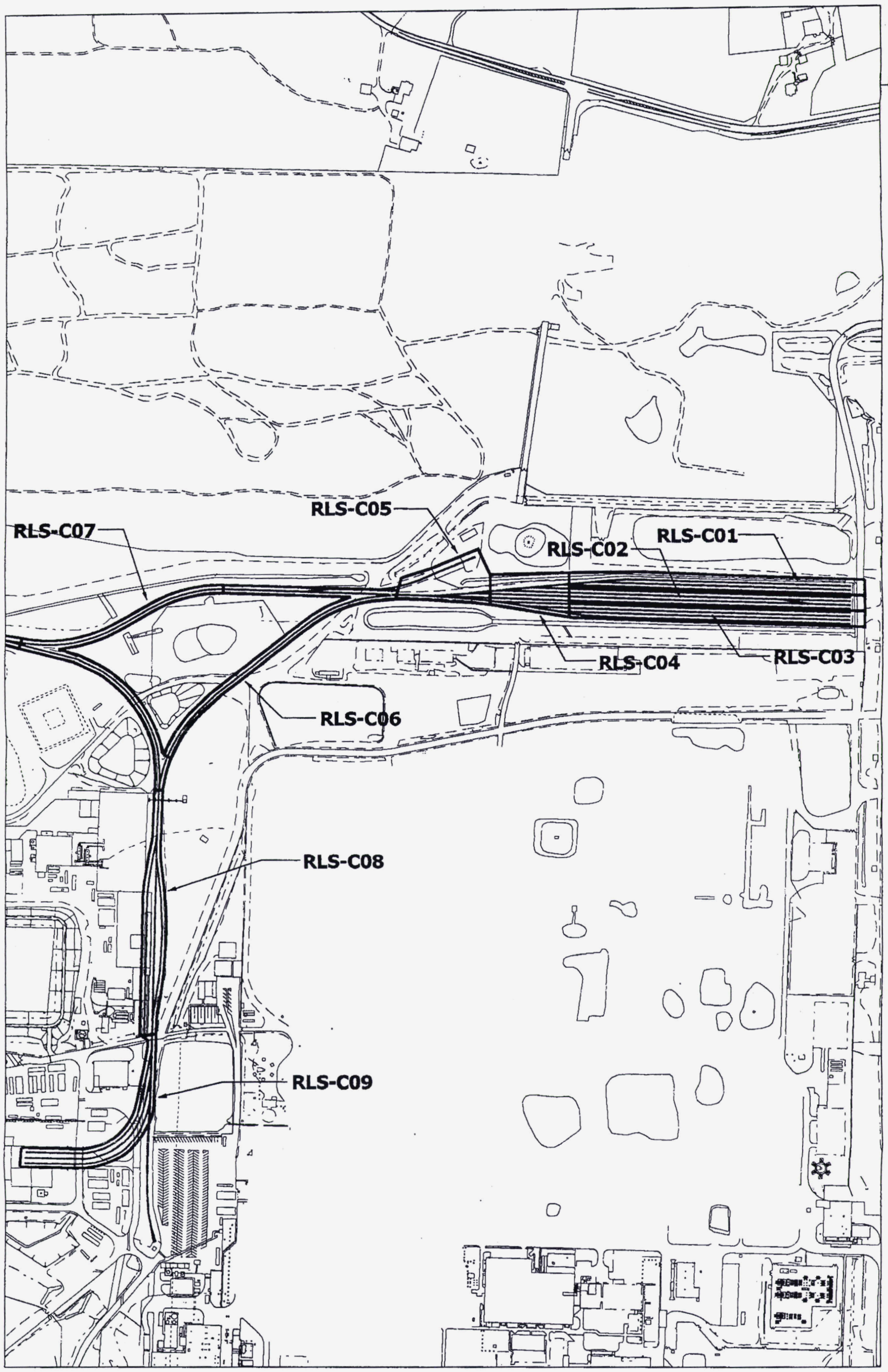
FIGURE 1 SITEWIDE RAIL LINE SYSTEM LOCATION MAP



LEGEND:

SCALE

350 175 0 350 FEET

DRAFT

FIGURE 2 SITEWIDE RAIL LINE SYSTEM CERTIFICATION AREA BOUNDARIES (CUs 1-9)

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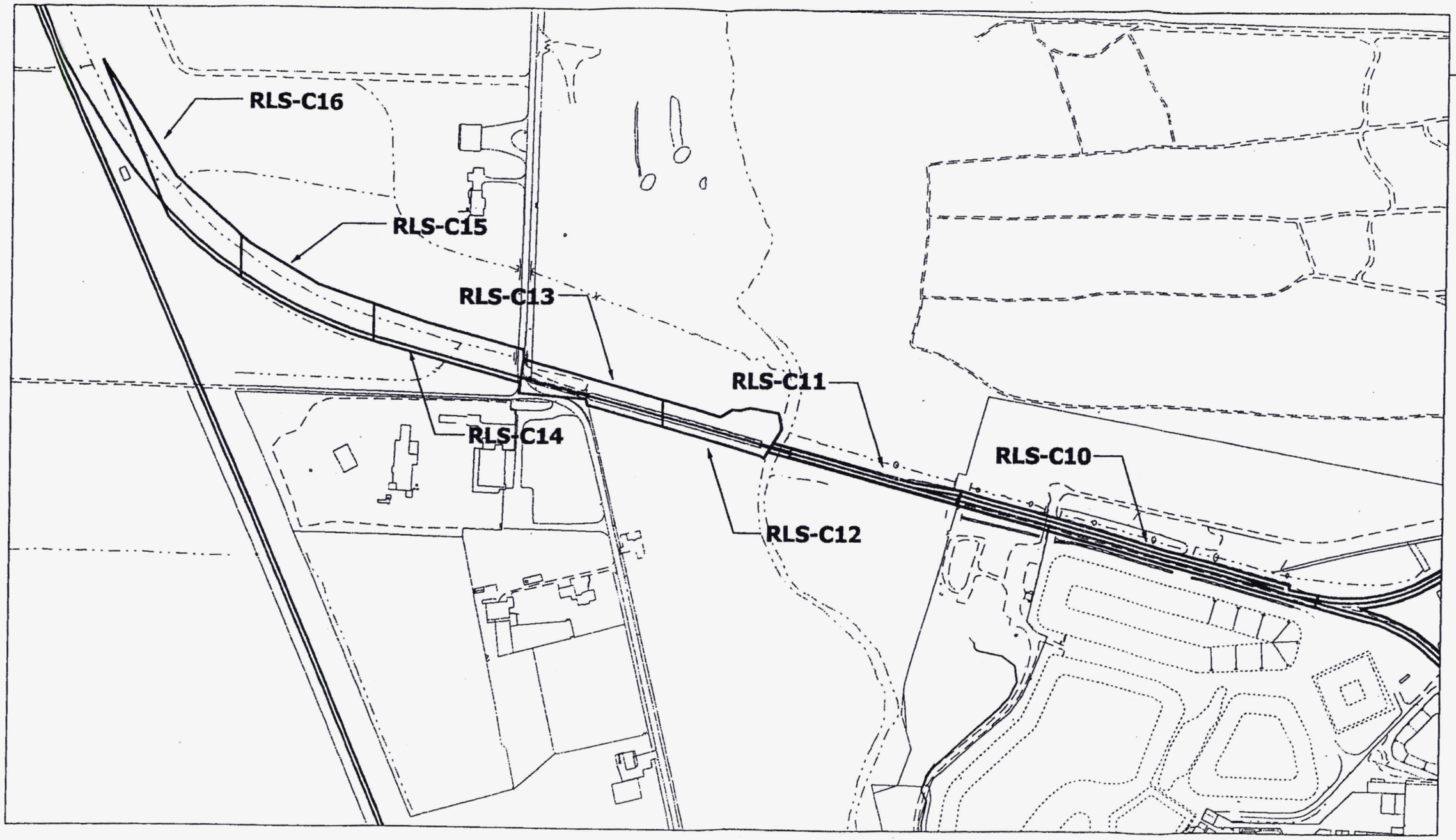
STATE PLANAR COORDINATE SYSTEM 1983

15-DEC-2005



LEGEND:

DRAFT

SCALE

300 150 0 300 FEET

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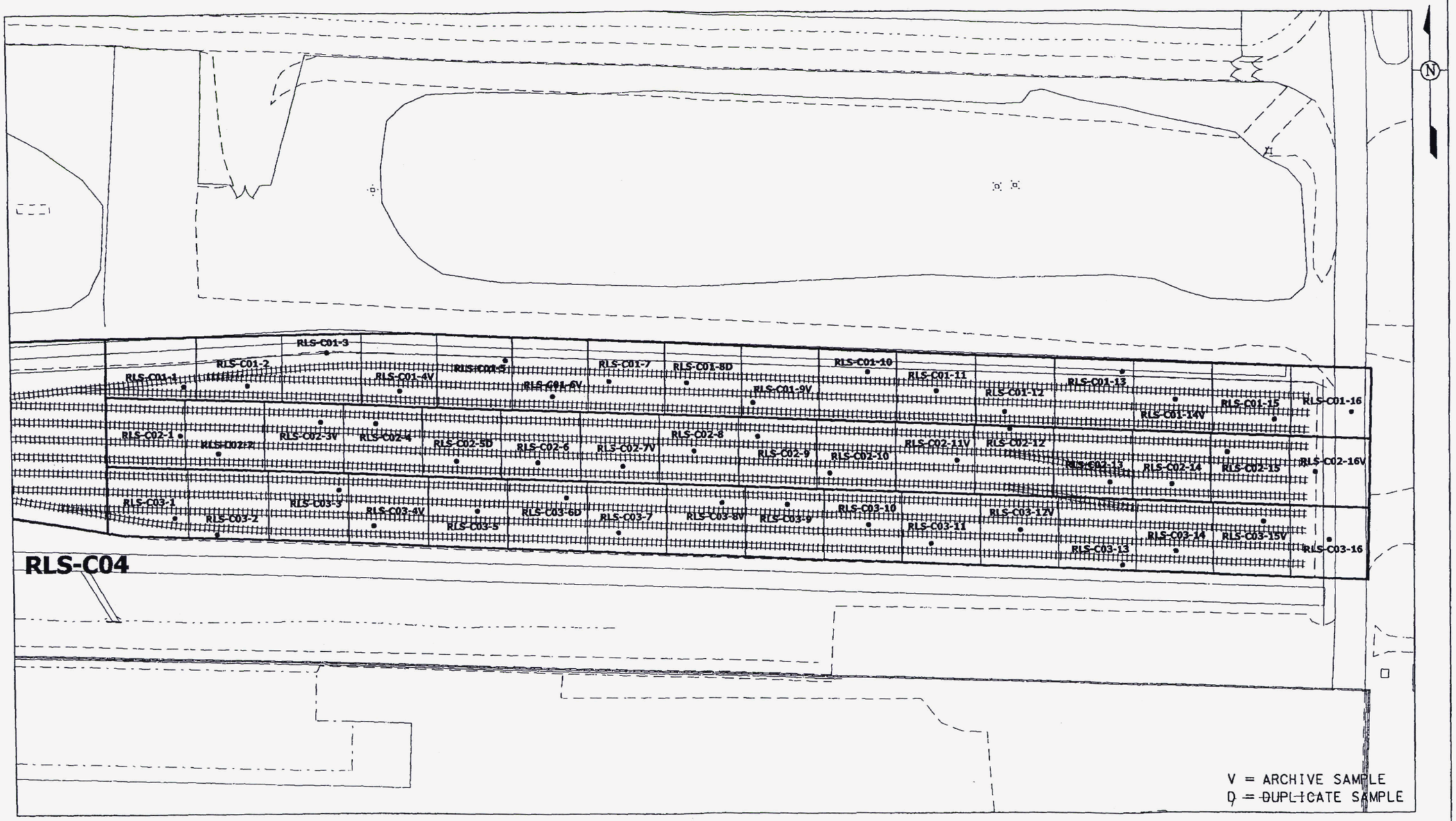
FIGURE 3 SITEWIDE RAIL LINE SYSTEM CERTIFICATION AREA BOUNDARIES (CUs 10-16)



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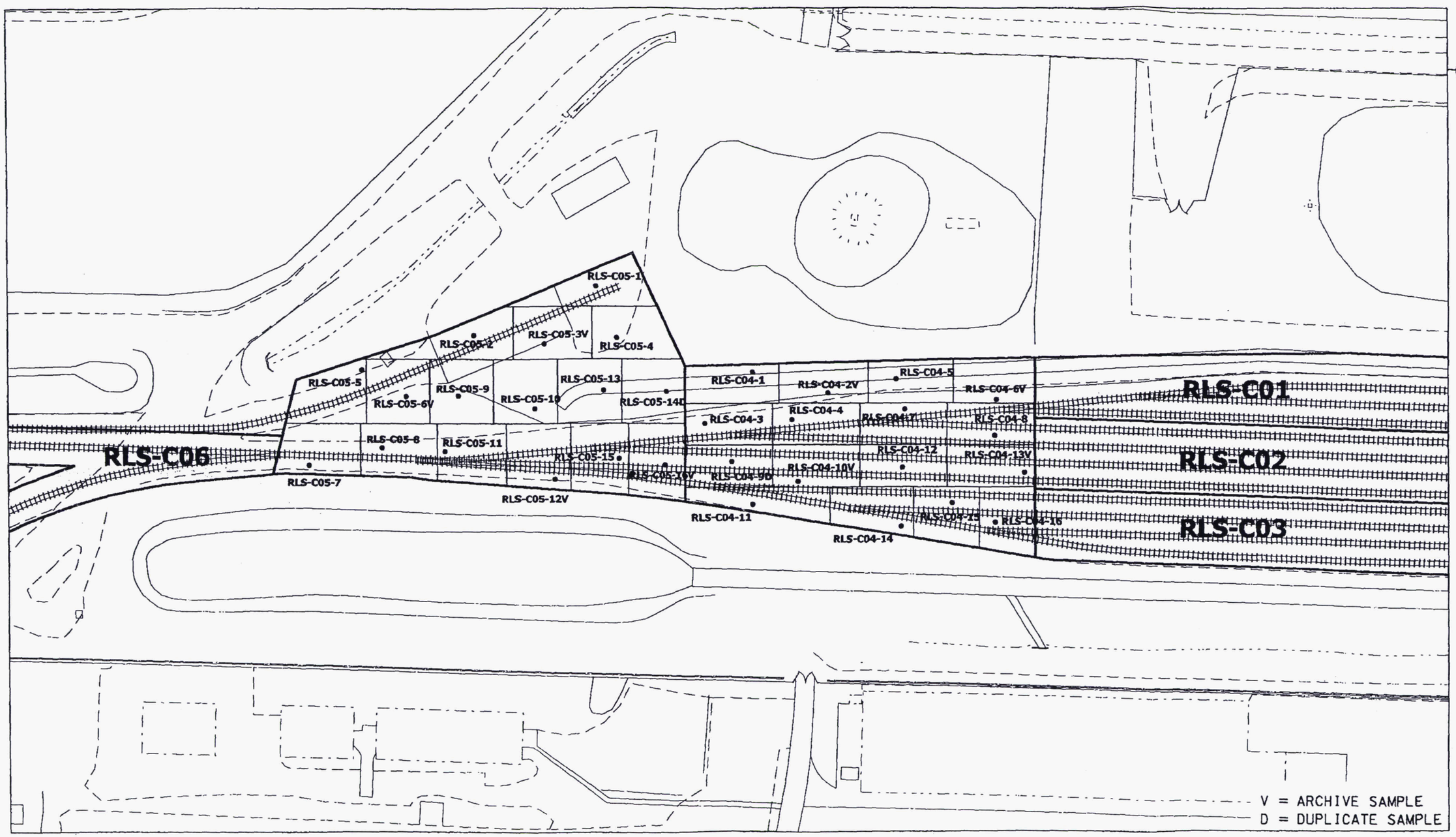
v:\2fm12\dgn\rcall_004.dgn STATE PLANAR COORDINATE SYSTEM 1983 15-DEC-2005

FIGURE 4 CERTIFICATION SAMPLING LOCATIONS (CUs 1-3)



LEGEND:

• SAMPLE LOCATION

SCALE

80 40 0 80 FEET

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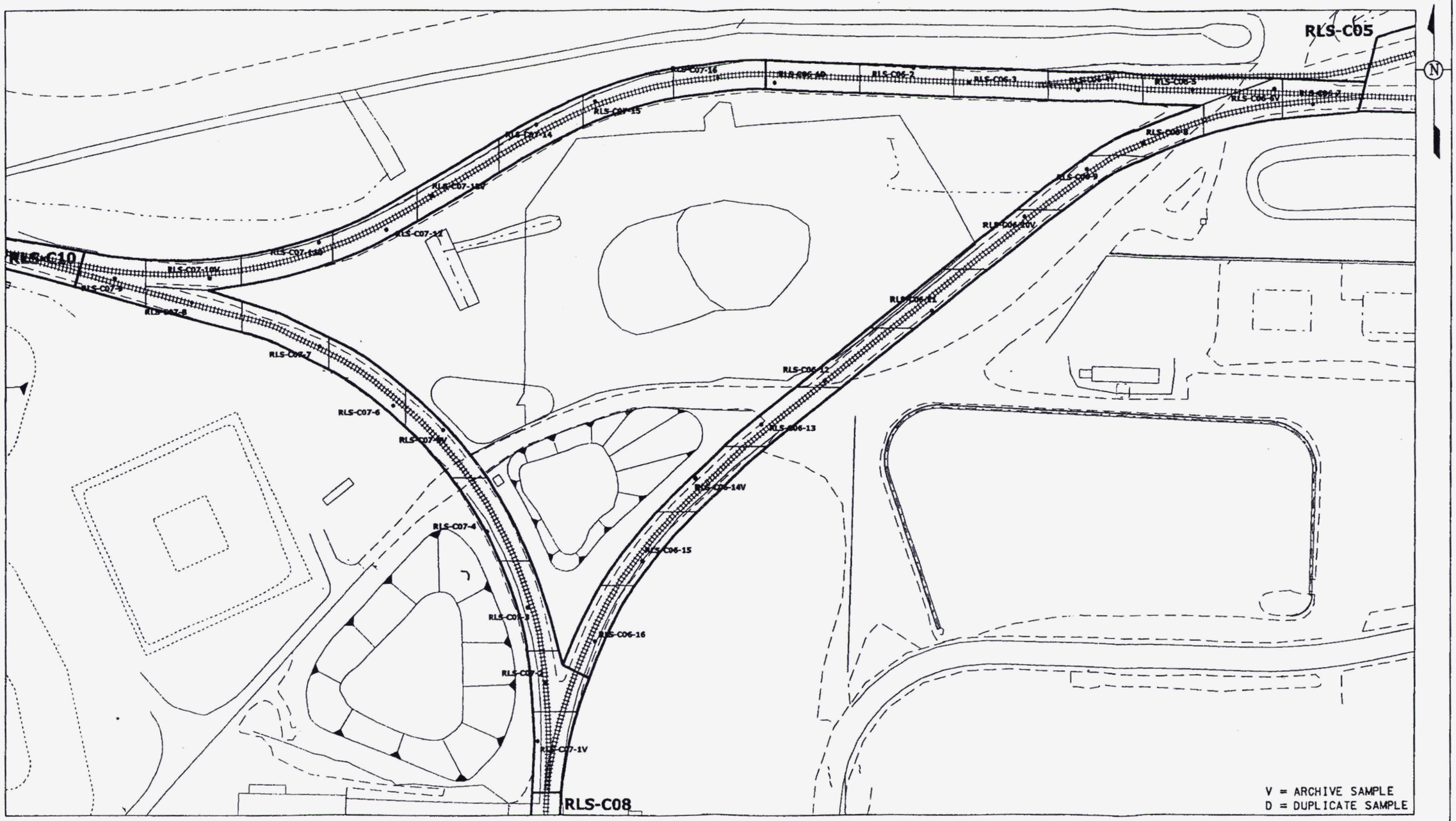
FIGURE 5 CERTIFICATION SAMPLING LOCATIONS (CUs 4 & 5)



LEGEND:

• SAMPLE LOCATION

SCALE

100 50 0 100 FEET

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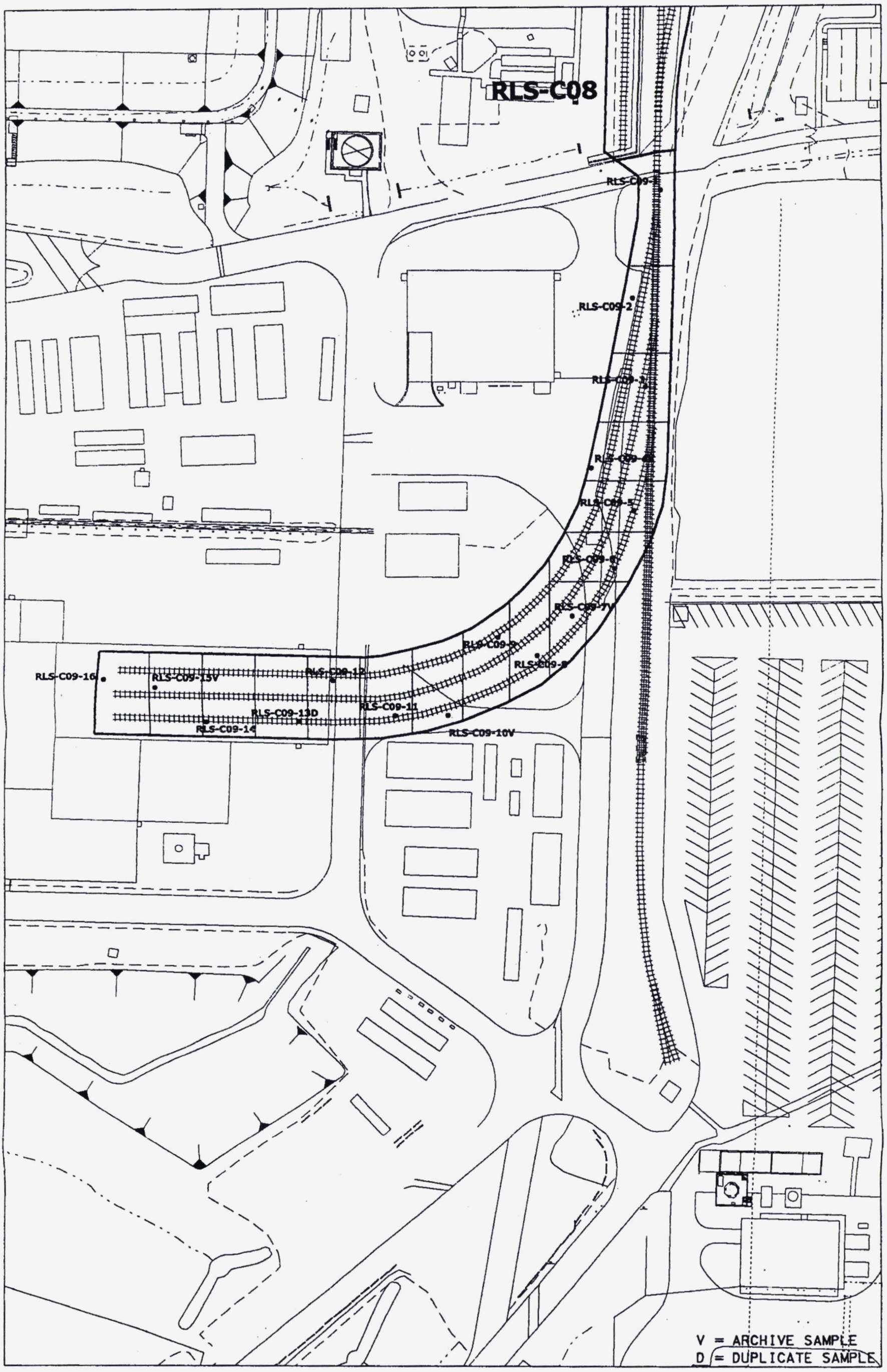
FIGURE 6 CERTIFICATION SAMPLING LOCATIONS (CUs 6 & 7)



LEGEND:

• SAMPLE LOCATION

SCALE

80 40 0 80 FEET

DRAFT

FIGURE 8 CERTIFICATION SAMPLING LOCATIONS (CU 9)

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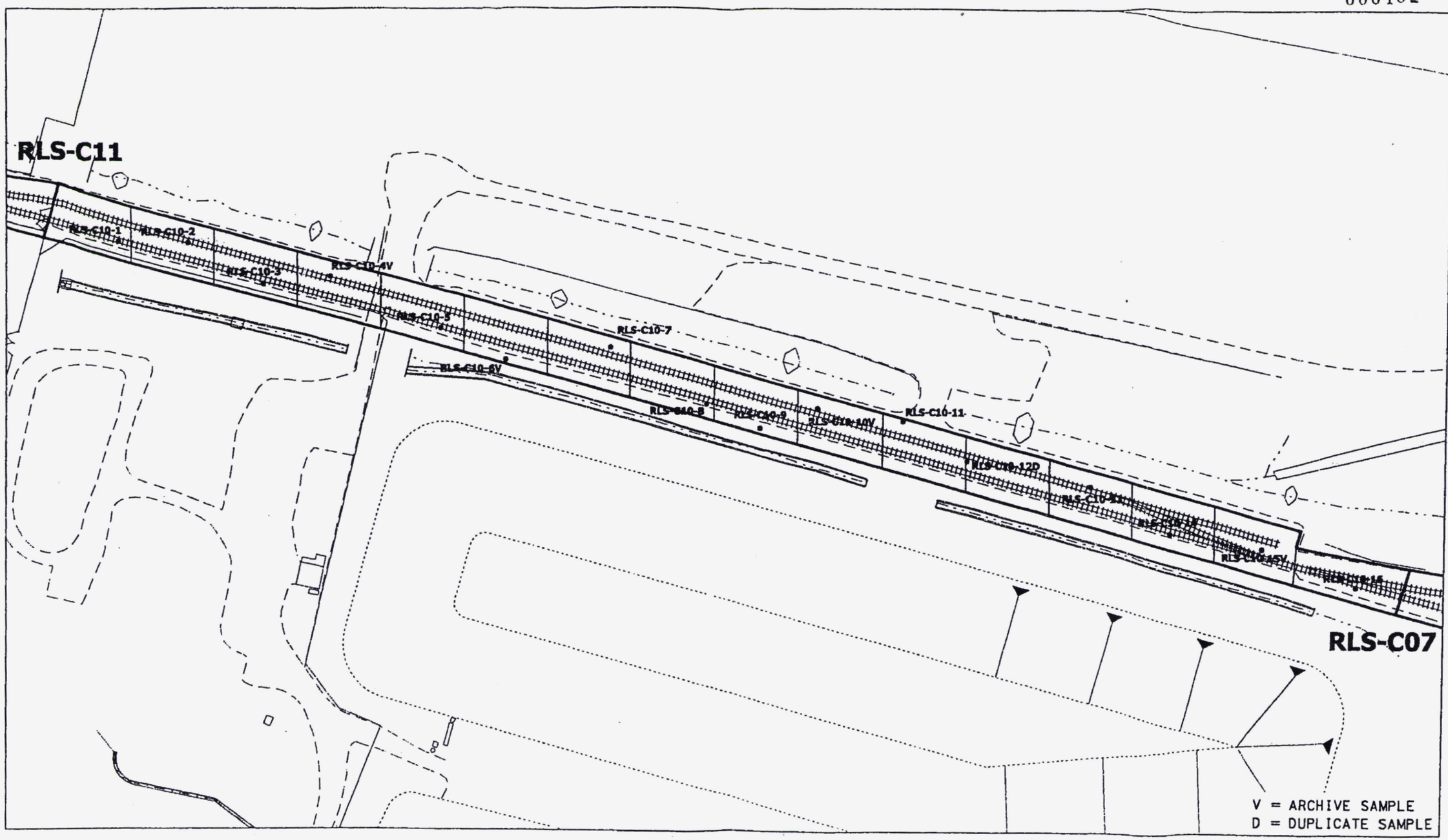
06-DEC-2005



LEGEND:

• SAMPLE LOCATION

SCALE

80 40 0 80 FEET

DRAFT

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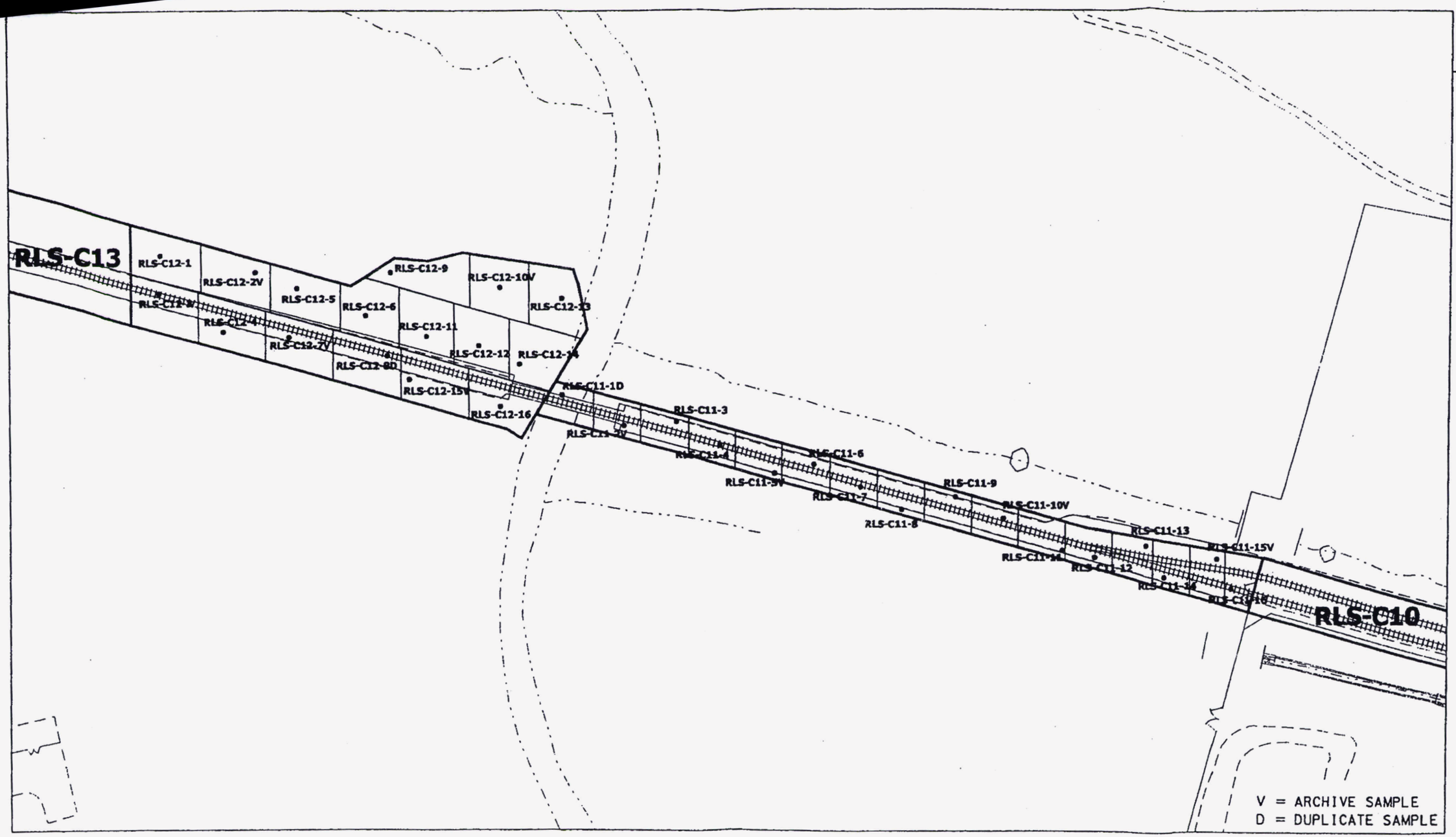
FIGURE 9 CERTIFICATION SAMPLING LOCATIONS (CU 10)



LEGEND:

• SAMPLE LOCATION

SCALE

80 40 0 80 FEET

DRAFT

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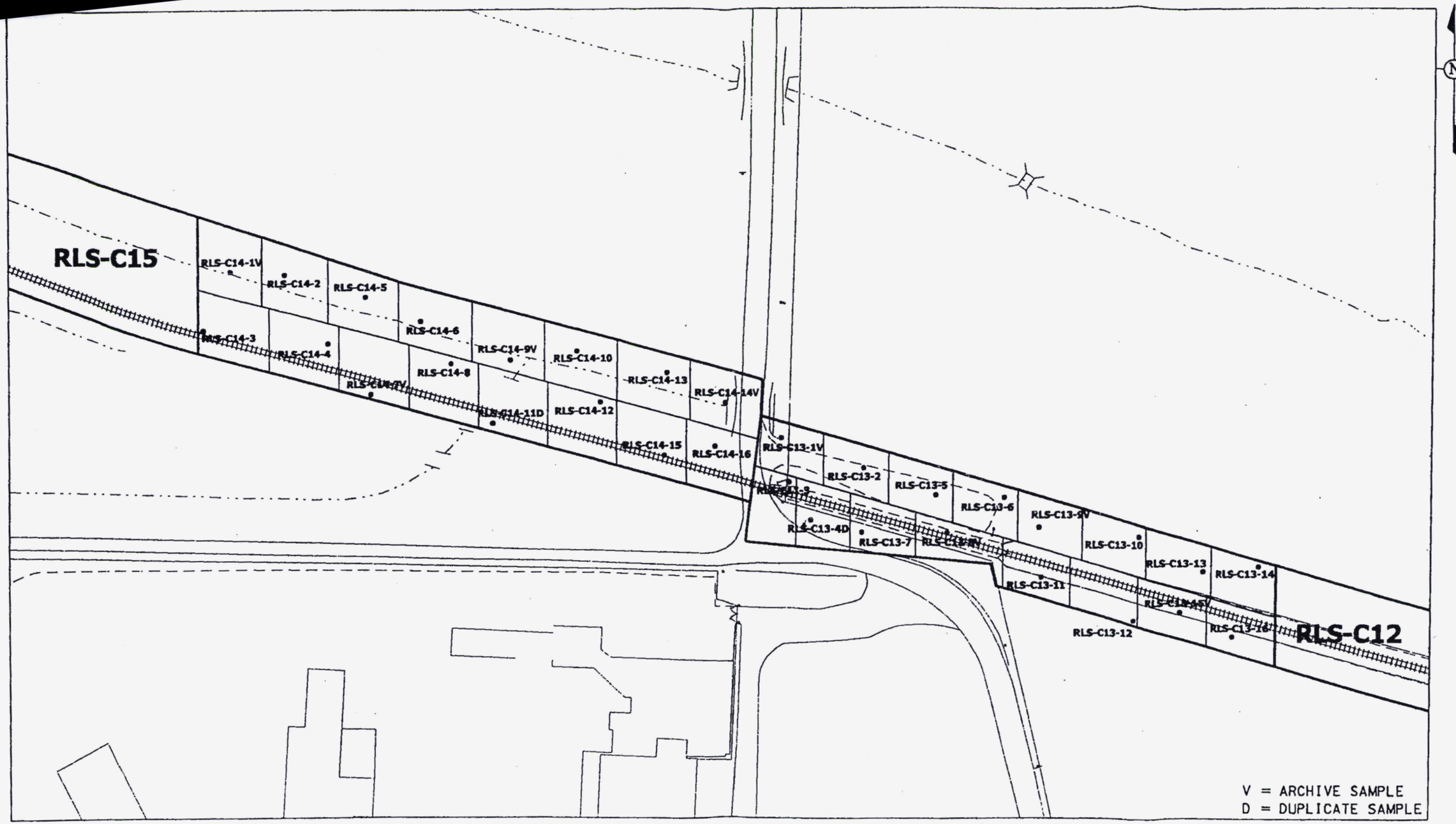
FIGURE 10 CERTIFICATION SAMPLING LOCATIONS (CUs 11 & 12)



LEGEND:

• SAMPLE LOCATION

SCALE

80 40 0 80 FEET

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30-NOV-2005

FIGURE 11 CERTIFICATION SAMPLING LOCATIONS (CUs 13 & 14)

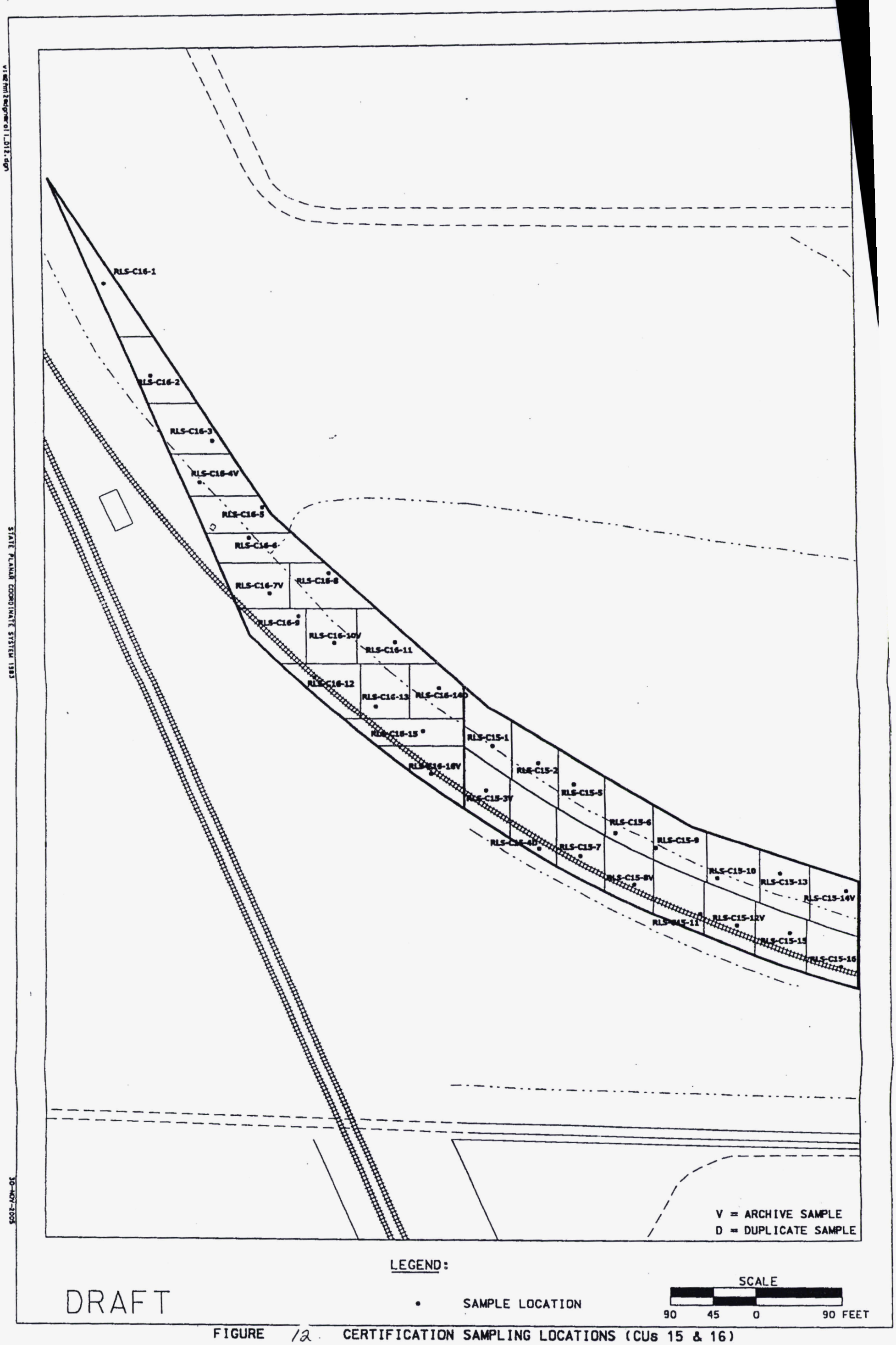

FIGURE 12 CERTIFICATION SAMPLING LOCATIONS (CUs 15 & 16)